ROM

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TWILIGHT OF THE MESOZOIC: Dinosaur diversity on the eve of the asteroid / *Cambrian Sea revisited:* The Burgess Shale record of early life / **FROM THE FOREST PRIMEVAL:** The Anglo-Acadian furniture of John Tulles / **ON THE PROWL:** The relentless migration of North America's coyotes / *Plus:* **JAMES CHATTO** on chocolate (Maya style) and MARK KINGWELL on the wondrous cosmos

Display until June 15, 2012

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Photo: Richard Herrmann/ © SeaPics.com

Spring 2012
Volume 44, Number 4

p. 22

Nature in Focus. High on a ledge in the Burgess Shale, Sir David Attenborough and ROM curator Dr. Jean-Bernard Caron were filmed October 1, 2009, for the series First Life. To learn more, go to firstlifeseries.com

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ON THE COVER

Natural history (main image): *Carnotaurus* is one of the southern-continent dinosaurs that will be on view in the ROM's upcoming exhibition *Ultimate Dinosaurs: Giants from Gondwana* opening June 23, 2012, at the ROM.

World cultures: Pre-Columbian star macehead (bronze), before 1532 CE

INFORMATION

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ADMISSION PRICES
ROM Members: FREE*
Adults: $15
Students and seniors with ID: $13.50
Children (4 to 14 years): $12
Infants 3 and under: FREE

Discount admission on ROM Friday Nights, presented by SunLife Financial, from 4:30 pm to 8:30 pm: Adults $9; Students and seniors with ID $8; Children $6. Feature exhibitions are an additional $10 for adults, $9 for seniors/students, and $5 for children.

Admission is free on Tuesdays for post-secondary Canadian students with ID.

Museum and Arts Pass Program participant.

**All adult Members must present a valid membership card and photo ID. Membership cards are not transferable except for RPC Members.*

Cover: *Carnotaurus*. Julius T. Csotonyi, Illustrator © 2011 Royal Ontario Museum. Star macehead, ROM HP559. Photo: Chris McLean. Parks Canada

Our Contributors

Cheryl Blackman
ASSISTANT VICE-PRESIDENT

In Cheryl Blackman's role as assistant vice-president, Visitor Experience and Audience Insight ("Breaking Down Barriers"), she oversees the admissions and on-site membership sales team, the accessibility portfolio, and the newly forged audience insight focus. For many years she has worked with the community of people with disabilities to develop a collaborative Accessibility Advisory Committee. One of its goals is to ensure access to those who face accessibility, inclusion, and economic barriers to participating in cultural organizations. Blackman's leadership has resulted in the ROM's being recognized as a model for accessibility by the Ministry of Community and Social Services and the Accessibility Directorate of Ontario.

What has been your best moment working toward accessibility? One of them was working with the project team on *Who's Drawing the Lines*. The project team completed the exhibition with a strong sense that using inclusive strategies could transform the Museum experience for patrons.

Jean-Bernard Caron
CURATOR

Jean-Bernard Caron ("The Origins of Modern Diversity") joined the ROM in January 2006 after completing his PhD at the University of Toronto on the Burgess Shale community. Caron has published in top scientific journals, including *Nature* and *Science*, and his research regularly makes news headlines. In recognition of his research on the Burgess Shale, he was the recipient of the 2010 *Pikaia* award from the Geological Association of Canada for outstanding research in Canadian paleontology. He continues to lead new field expeditions, accompanied by students and colleagues from across the world.

What has surprised you most about the Burgess Shale? Although the site was discovered more than a century ago, new species representing animal groups not known before continue to be discovered. This suggests that we are still far from understanding the true significance of the Burgess Shale. Like a good wine, it has yet to attain its full body!

Judith Eger
SENIOR CURATOR

Judith Eger ("Tracking the Coyote") is senior curator of Mammalogy and Deputy Head of the ROM's Department of Natural History. She joined the ROM in 1968 as a research assistant and after completing her PhD in 1984, she was appointed curator of mammalogy. Judith's main research interest has been the biodiversity of bats in Southeast Asia, where she has carried out fieldwork in Vietnam and China.

What sparked your interest in writing about coyotes? As a naturalist and conservationist, I take great pleasure in watching animals and helping to protect them. My PhD focused on arctic mammals and their patterns of geographic variation. I still have more than a passing interest in the glaciations of North America and how they have affected the current distribution of mammals in Canada.

Ross Fox
RESEARCH ASSOCIATE

Ross Fox ("The Importance of Designer Labels") recently retired from the ROM, where he was the curator responsible for Canadian decorative arts. He was the curatorial interpreter and developer for the decorative arts exhibits in the Sigmund Samuel Gallery of Canada. Fox remains a ROM research associate and an affiliated faculty member at the University of Toronto.

Why the fascination with furniture? Of all the Canadian decorative arts, furniture has the oldest continuity of production and consequently speaks loudest when interpreted from a material culture perspective. Unlike silverwork, for instance, furniture could be found at all levels of society. Through its careful analysis, it has the potential to convey information not available in historical records about the evolving Canadian experience, whether from the perspective of social, economic, cultural, political, or religious history. It also reflects transnational connections related to the immigrant experience, which is a special interest of mine.

THE *DEFINITIVE* ONTARIO FIELD GUIDES

Available at the ROM Museum Store, bookstores, and online

A Letter from our Director and CEO

A Dynamic Museum

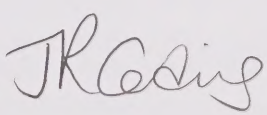
There are many myths about museums. One of them is that museums are static and unchanging—the museum as mausoleum. But the ROM is the opposite of that, and one of our tasks is to confound people's preconceptions. With its diversity of exhibitions, programs, lectures, and special events, its many new exhibits in the permanent galleries, and its fabulous stores and restaurants, the ROM is always different, and for many, an essential destination. Its appeal is broad spectrum, from the newest interactive exhibit technologies to traditional serene and contemplative spaces. Our Members understand the value of being connected to the Museum year round, of being kept abreast of what's on, and they are the first to be made aware of visits by outstanding guest lecturers and speakers such as Academy Award winner Meryl Streep and Pulitzer Prize winner Jared Diamond, whose talks were very quickly sold to capacity.

While we continually attempt to create new ROM Members, to increase the group who know the variety of what we offer, we also work hard to attract new visitors. Our research showed that many potential visitors felt that a one-time visit was cost prohibitive. In October 2011, we responded with significantly reduced admission prices, and we are beginning to see very positive results. It is our hope that many of our new visitors, on becoming aware of the enriching benefits of this dynamic Museum, will eventually also become Members.

This spring, our emphasis on narrative—the great stories of civilization and the natural world—finds expression in a variety of exhibits. The popular *Maya: Secrets of their Ancient World* continues until April 9, 2012. In conjunction with the exhibition, archaeoastronomer Anthony Aveni presents his lecture *The End of Time: The Maya Mystery of 2012* (March 20, 7–8 pm), an authoritative interpretation of the Maya Long Count calendar and the Maya universe. A new exhibition, *Shahnama: The Persian Book of Kings* (opened February 25), features 14th- to 17th-century illustrations from this heroic epic. *The Art of Collecting* exhibits one hundred of the ROM's best examples of European and American decorative art, from rare maiolica to Art Deco silver. And, looking toward summer, the Museum is preparing for its huge blockbuster *Ultimate Dinosaurs: Giants from Gondwana*, sure to be a crowd pleaser, especially for families. Watch for more information in ongoing ROM communications.

In this issue of *ROM*, Canadian decorative arts researcher Ross Fox writes about Acadian colonial cabinetmaker John Tulles (1771–1827), several of whose masterworks are in the Museum's collections. Mammalogist Judith Eger spotlights coyotes, a timely topic of interest and, for some, concern. Paleontologist Jean-Bernard Caron explores the origins of present-day biodiversity in the Burgess Shale, the Canadian Rocky Mountains fossil record of the Cambrian explosion of life more than 500 million years ago. The ROM holds the world's largest collection of Burgess Shale fossils, and plans are under way for our Early Life Gallery, which will showcase the best specimens.

So tell your friends about what the ROM has to offer, and invite them to visit a museum where the only mausoleum is the Ming Tomb!



JANET CARDING
DIRECTOR AND CEO

Photo: George Whiteside

THEMED KIDS WEEKENDS THIS SPRING AT THE ROM

Archaeology Weekend
Saturday, April 14, and Sunday April 15

Earth Weekend with Barbara Reid and the Robert Bateman Get to Know Contest
Saturday, April 21, and Sunday, April 22

Dinos Weekend
Saturday, April 28, and Sunday, April 29

Space Weekend
Saturday, May 5, and Sunday, May 6

Ancient Egypt Weekend
Saturday, May 12, and Sunday, May 13

Awesome Animals Weekend
Saturday, May 19, Sunday, May 20, and Monday, May 21

Ancient Rome and Greece Weekend
Saturday, June 9, and Sunday, June 10

For details of the live, interactive events featured during these special days, go to **rom.on.ca**.

ROM Royal Ontario Museum

ROM
Magazine of the Royal Ontario Museum

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Exhibitions and gallery openings

Maya portraits: Head of a woman wearing an elaborate flower headdress, ceramic, Late Classic period (600–900 CE), Tenam Rosario, Chiapas, Mexico. Museo Regional de Chiapas, Mexico, 10-338430

In the Spotlight

Until April 9, 2012 Feature Exhibition

Garfield Weston Exhibition Hall, Michael Lee-Chin Crystal, Level B2

LAST CHANCE

Maya: Secrets of their Ancient World

There's still a month left to visit or re-visit this superb collection of nearly 250 Maya artifacts—including masks, jewellery, and more—and to learn about this ancient civilization.

This exhibition is co-produced by the Royal Ontario Museum (ROM) and the Canadian Museum of Civilization (CMC) in collaboration with the National Institute of Anthropology and History (CONACULTA-INAH). This event has been financially assisted by the Ontario Cultural Attractions Fund, a program of the Government of Ontario through the Ministry of Tourism and Culture, administered by the Ontario Cultural Attractions Fund Corporation.

CANADIAN MUSEUM OF CIVILIZATION | MUSÉE CANADIEN DES CIVILISATIONS | Canada | Instituto Nacional de Antropología e Historia | Consejo Nacional para la Cultura y las Artes

Official Guide to the ROM Blockbuster Exhibition
$5 ($4.50 for ROM Members) tax included. Available at the ROM Museum Store, bookstores, and online.

Medicine bag (cloth; beads), Ojibwa, North America. The pouch belonged to Anishinaabe Chief Shingwauk.

Opens July 14, 2012
Rotating Exhibition
Daphne Cockwell Gallery of Canada: First Peoples, Hilary and Galen Weston Wing, Level 1

COMING SOON

Sovereign Allies / Living Cultures

A new exhibit in the Great Lakes section of the Cockwell Gallery explores themes related to the historical role of First Nations in wars between Britain and the United States and to the continued vitality of First Nations cultures in the region today.

February 25 to September 3, 2012 Rotating Exhibition
Middle East/South Asia Special Exhibit Area, Sir Christopher Ondaatje South Asian Gallery, Michael Lee-Chin Crystal, Level 3

NEW

Shahnama: The Persian Book of Kings

A thousand years ago, Persian poet Abu'l-Qasim Firdausi penned this epic story of the kingdom of Iran, from the myths of its earliest times to the historical Arab conquest in the 7th century. For hundreds of years Firdausi's verses served as a mirror for self-reflection and inspiration for the ruling elite not only in Iran but in neighbouring cultures where Persian served as the language of court literature—the central Asian states to the north and the Ottoman and Mughal empires. Manuscripts of the heroic epic were often richly illustrated and illuminated.

This exhibition gathers *Shahnama* illustrations from Iran, Turkey, central Asia, and Mughal India dating from the 14th century, the earliest preserved versions, to the 17th century, when production of illustrated manuscripts waned. Displayed works include paintings from McGill University and the Montreal Museum of Fine Arts.

Shah Yazdagird killed by a mysterious white horse, from a *Shahnama* made in 1352 in Shiraz, Iran.

Woman's head, photo by Jorge Vértiz. Medicine bag, ROM 911.3.75. Manuscript, ROM 967.315.1

Opening June 23, 2012 **Feature Exhibition**
Garfield Weston Exhibition Hall, Michael Lee-Chin Crystal, Level B2

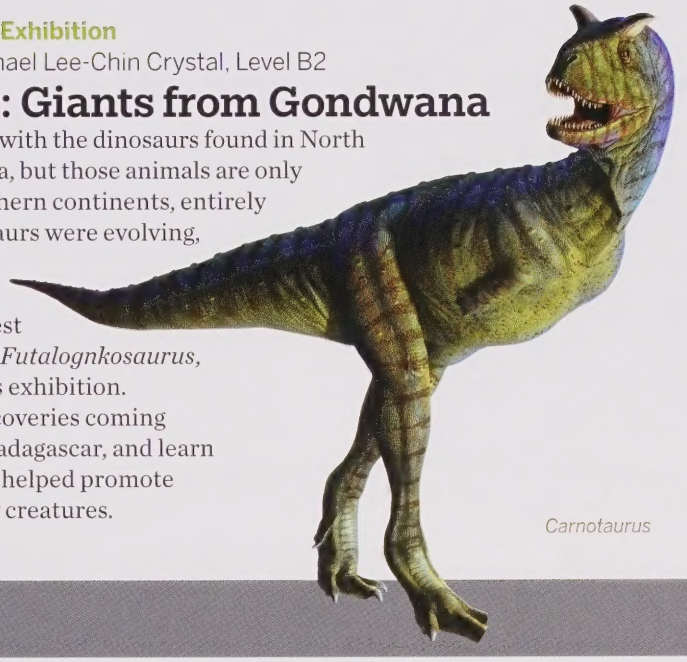
Ultimate Dinosaurs: Giants from Gondwana

COMING SOON

Many people are familiar with the dinosaurs found in North America, Europe, and Asia, but those animals are only half the story. In the southern continents, entirely different groups of dinosaurs were evolving, including the largest meat-eating dinosaur ever to have lived, *Giganotosaurus*, and one of the largest land animals ever, the 100-foot long *Futalognkosaurus*, both of which will be featured in this exhibition.

Explore the exciting dinosaur discoveries coming out of South America, Africa, and Madagascar, and learn about the Earth-moving events that helped promote the evolution of these extraordinary creatures.

Presented by RAYMOND JAMES



Carnotaurus

Also On

Indefinite Run
Exhibit of Contemporary Expressions, Daphne Cockwell Gallery of Canada: First Peoples, Hilary and Galen Weston Wing, Level 1

Jane Ash Poitras: New Acquisitions of Contemporary First Nations Art

Throughout 2012
Shreyas and Mina Ajmera Gallery of Africa, the Americas, and Asia Pacific, Michael Lee-Chin Crystal, Level 3

New Acquisitions Featured in the Ajmera Gallery

Ere Ibeji, female twin figures, Yoruba, Nigeria, made of wood, fibre, metal, and pigment. Collected by Jack Lieber in 1968.

Pond lily lamp, blown iridescent glass, patinated bronze, c. 1902. Tiffany Studios, Corona, New York, USA

Until September 3, 2012 **ROM Original Exhibition**
European Temporary Exhibition Space, Samuel European Galleries, Hilary and Galen Weston Wing, Level 3.

The Art of Collecting

One hundred of the Museum's finest pieces of American and European decorative art—from rare maiolica to Art Deco silver—have been selected for display in this ROM original exhibition, which examines how decorative art styles developed from the late Renaissance to the postmodern period. Thanks to many generous donations, the ROM has amassed the most comprehensive European decorative arts collection in Canada. "We are particularly excited about this exhibition," says co-curator Brian Musselwhite, "because it gives us an opportunity to honour the ROM's donors and to share their treasures with Museum visitors."

Note: Return visits are a must as objects will be rotated several times during the show.

Last Chance

Until June 2012
Ongoing Exhibition
Herman Herzog Levy Gallery, Asian Suite of Galleries, Philosophers' Walk Wing, Level 1

Embellished Reality: Indian Painted Photographs

Exhibit Sponsor:
Manulife Financial

Cabinet Card of a Young Man in Military Uniform, Gobindram & Oodeyram, Jaipur, Rajasthan, India, c. 1900. Opaque watercolour and gold on collodion printing-out paper print.

Until April 29 2012
Ongoing Exhibition
Wilson Canadian Heritage Exhibition Room, Sigmund Samuel Gallery of Canada, Weston Family Wing, Level 1

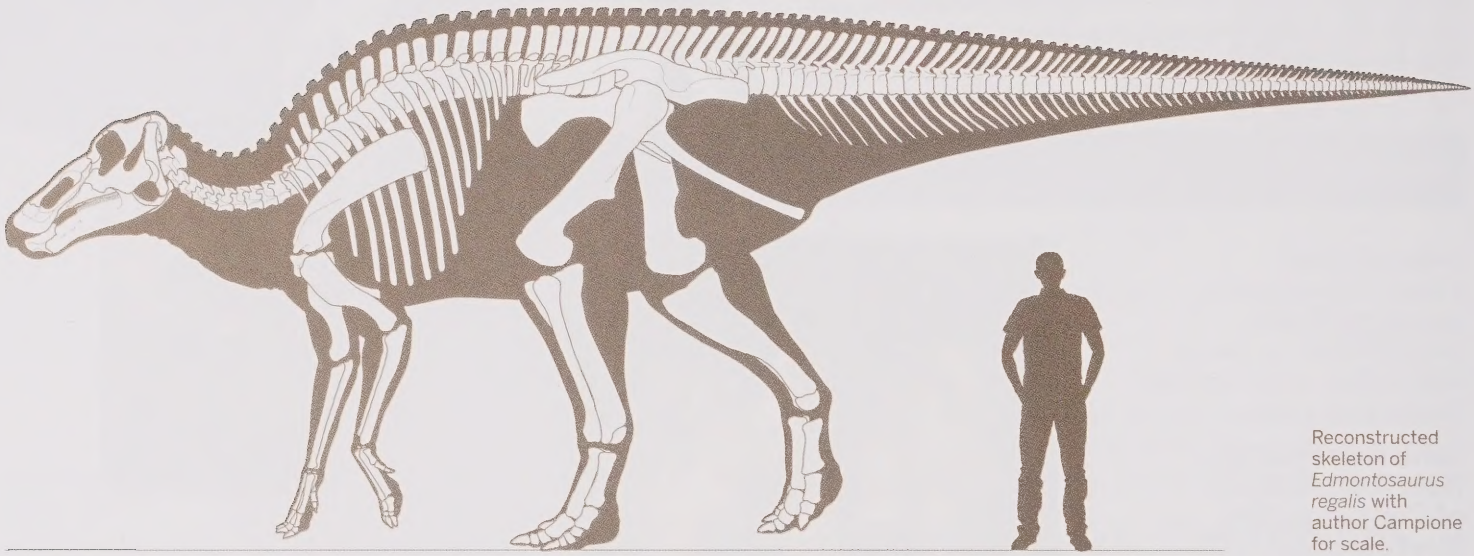
Sitting Still: Faces of Childhood

Florence Louisa Nelles, by Delos Cline Bell (Canadian, 1829–1918). Oil on canvas, c. 1863

NEW PHOTOGRAPHY EXHIBITIONS: Two new exhibitions have just been announced: *Elegy: Deborah Samuel* opens March 31, 2012, and *Larry Towell & Donovan Wylie: Afghanistan* opens May 5, 2012. For details, see *Let's ROM* or go to **rom.on.ca**

Carnotaurus: Julius T. Csotonyi, Illustrator, © 2011 Royal Ontario Museum. Carved twins: ROM 2010.45.4.1. The Jack Lieber Collection of Yoruba Art. Lamp: purchased by the ROM with the assistance of a Moveable Cultural Property grant accorded by the Minister of Canadian Heritage. ROM 998.78.1.1–1.19, acquisition made possible with the generous support of the Department of Museum Volunteers Acquisition and Research Fund; Certified Canadian Cultural Property. Painted photograph: ROM 2006.53.1; This acquisition was made possible with the generous support of the South Asia Research and Acquisitions Fund. *Florence Louisa Nelles*, © Royal Ontario Museum; gift of Mr. Mark and Mr. James Burnham

Discoveries, Dispatches, and Discourse



Reconstructed skeleton of *Edmontosaurus regalis* with author Campione for scale.

News

A New Shape to Dinosaur Extinction

ROM researchers take an ecological approach

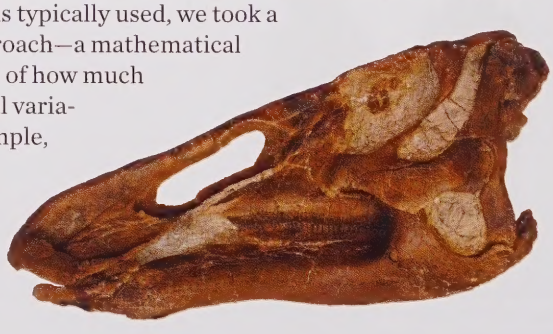
One of the most fascinating aspects of paleontology is the seemingly sudden extinction of the dinosaurs. Today, most scientists agree that a major extraterrestrial impact probably caused the final extinction. But the questions "if" and "how" dinosaur diversity changed leading up to this event are still hotly debated. Were dinosaurs already on the decline in the twilight of the Mesozoic?

A number of recent analyses suggest that dinosaurs were wiped out at a time when their populations were at a peak in diversity. But well-known paleontologist Jack Horner and his colleagues argue that scientists may be recognizing too many species in the time just before the extinction. In 2009, with co-author Mark Goodwin, Horner suggested that the well-known dome-headed dinosaurs *Dracorex* and *Sygimoloch* were simply misidentified juveniles of the much larger *Pachycephalosaurus*. The following year, Horner and John Scannella controversially proposed that the horned dinosaurs *Nedoceratops* and *Torosaurus* were more mature specimens of the famous *Triceratops*.

Not all scientists agree, but getting it right is important because the shape of dinosaur diversity leading up to the asteroid impact may ultimately reveal new information about the nature of dinosaur extinction, and mass extinctions in general.

Last fall, the ROM contributed a significant piece to this puzzle. We studied diversity among hadrosaurs (the duck-billed dinosaurs) in the last five million years of the Cretaceous (145.5 to 65.5 million years ago). We focused on *Edmontosaurus*, the only group of large dinosaurs thought to have become more diverse just before the extinction. We analyzed variation in almost all of the known *Edmontosaurus* skulls, taking into account size and growth. Our results were clear: of five named species, only two are valid, *Edmontosaurus regalis*, which lived about 71 million years ago, and *Edmontosaurus annectens*, found in rocks at the very end of the Age of Dinosaurs (about 67 million years ago). The others had all been based on fossil skulls now known to represent life-cycle stages of growth in *E. regalis* and *E. annectens*.

What's most important about the project is the approach we used to assess diversity. Rather than the more subjective species count, which is typically used, we took a disparity approach—a mathematical measurement of how much morphological variation is in a sample,



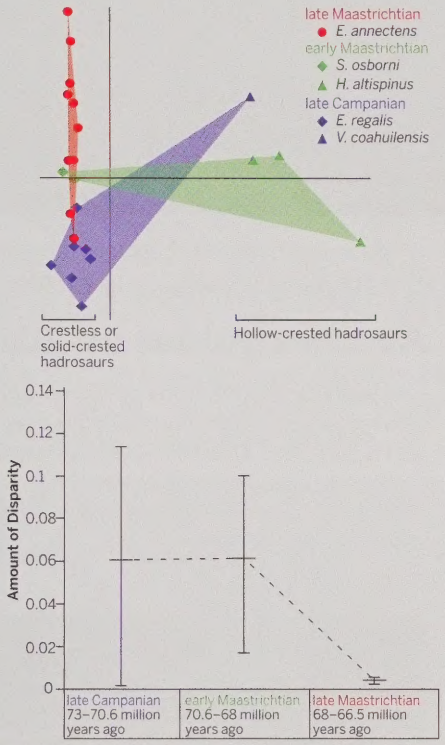
Edmontosaurus skull studied by Evans and Campione.

Reconstruction by Danielle Dufault

Hadrosaur Disparity Through Time

On the upper graph, each point corresponds to a hadrosaur skull. The position of each skull relative to the axes is indicative of its overall shape. Therefore, points that are closer to each other are more similar in shape than those that are far apart.

The colours correspond to geological age of the hadrosaur skull. When the points are grouped based on their age (look at the large coloured shapes), it is clear that there is a much larger range in skull shapes (in other words, disparity) during the late Campanian (blue) and early Maastrichtian (green). By the late Maastrichtian (red), there has been a significant loss in morphology, including a complete loss of hollow-crested dinosaurs. This drop in disparity is shown in the lower graph.



in our case, duckbill skulls. More importantly, because this measure is based on morphology (the dinosaurs' physical structure), it is thought also to represent ecological variability, in that morphology reflects how the animals may have been using their environments. Our results show a clear decline in hadrosaur disparity, and therefore ecological variability, leading up to the extinction (and we are almost certain that the same pattern applies to the horned ceratopsid dinosaurs during that same interval).

This ecological approach gives a fresh and important perspective on the issue of dinosaur diversity in the Cretaceous. Regardless of how you view individual species, our study shows that large-bodied herbivorous dinosaurs were probably less ecologically diverse in the dying days of the Cretaceous than they had been for millions of years (at least in North America), which may have made it harder for them to survive a "bad day" such as an asteroid impact.

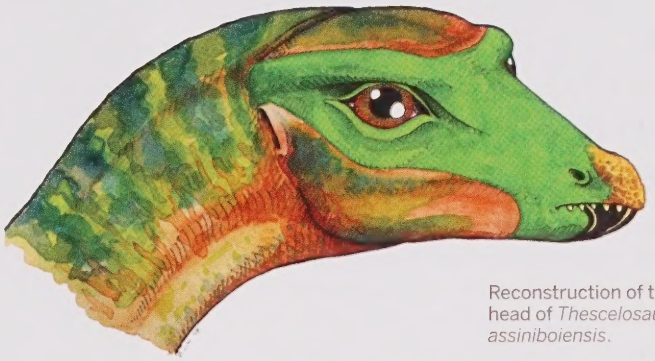
DAVID EVANS is associate curator of Vertebrate Paleontology and **NICOLÁS CAMPIONE** is a PhD candidate at the University of Toronto working in the ROM's Department of Natural History.

The full journal article is available online at PLoS ONE www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0025186
Campione, N. E., and D. C. Evans. 2011. Cranial growth and variation in edmontosaurs (Dinosauria: Hadrosauridae): implications for latest Cretaceous megaherbivore diversity in North America. PLoS ONE 6:e25186.

Artist's life reconstruction of the head of *Thescelosaurus assiniboiensis* (art by Robin Sissons). Toy soldier set, ROM 185.1–13, from the Henry N. R. Jackman Collection at the ROM

News

Recent Dinosaur News



Reconstruction of the head of *Thescelosaurus assiniboiensis*.

ROM student researcher names new dinosaur

Canada's newest dinosaur, the first to be discovered in Saskatchewan since 1926, was unveiled late last year in the *Zoological Journal of the Linnean Society* by Caleb Brown—now a PhD student at the ROM—and his colleagues. Called *Thescelosaurus assiniboiensis*, this two-legged dinosaur was about the size of a white-tailed deer. It is one of the smallest plant eaters to live alongside *Tyrannosaurus rex* and *Triceratops* at the very end of the Age of Dinosaurs. More new dinosaur namings are on the horizon. Brown and the ROM's David Evans are working on several projects describing new dome-headed and horned dinosaurs, to be published in the near future.

ROM paleontologist finds oldest dinosaur nesting site

ROM paleontologist David Evans and colleagues have discovered the world's oldest known dinosaur nesting site—in Golden Gate Highlands National Park, South Africa. Check the Summer 2012 issue of *ROM* magazine for the full story on this 190-million-year-old find and what it tells us about early dinosaur reproduction.

Bookshelf

ROM Toy Soldiers Poster

Soldiers of the world, artillery, tanks, army trucks, armoured cars, drummers, pipe bands, a coronation coach drawn by eight horses, and colourful pictorial labels from boxed sets of soldiers illustrate this vibrant poster. Includes representative toy soldiers from the War of 1812 era. Coming April 2012.

Based on *The Honourable Henry N. R. Jackman Collection of Toy Soldiers in the Royal Ontario Museum*, by K. Corey Keeble, published by the Royal Ontario Museum Press.

Britains Soldiers, Set 2148. Fort Henry Guard with Mascot: rifleman and goat.

Colossal Head, at Izamal, by Frederick Catherwood (1799–1854). The Thomas Fisher Rare Book Library, University of Toronto.

The End Is Near
Maya: Secrets of their Ancient World

As the Maya Long Count calendar winds down toward the end of the 13th *baktun*, the ROM blockbuster exhibition illuminates the mysteries of the great Maya antiquity—its achievements in art, architecture, astronomy, and the record of time. Until April 9, 2012. Catch it—while there's still time.

Maya Lectures
The End of Time: The Maya Mystery of 2012

Anthony Aveni. Tuesday, March 20, 2012, 7–8 pm
Anthony Aveni, the Russell B. Colgate Professor of Astronomy and Anthropology at Colgate University, Hamilton, New York, is considered one of the founders of Mesoamerican archaeoastronomy, in particular for his research into the astronomical history of the Maya people of ancient Mexico.

Conférence en français au ROM

Rio Bec: une cité maya atypique. Dimanche 1er avril à 14 h
Cette conférence sera l'occasion de présenter une zone archéologique au cœur des Basses Terres mayas dont les vestiges ne renvoient pas l'image d'une cité maya classique. À la lumière de recherches récentes, Céline Gillot présentera l'urbanisme et l'architecture qui font de Río Bec une cité atypique et expliquera la signification de ces éléments en termes sociopolitiques.

Céline Gillot, doctorante au Département d'anthropologie de l'Université de Montréal, participe depuis plusieurs années au vaste projet archéologique de Río Bec; elle étudie en particulier son architecture.

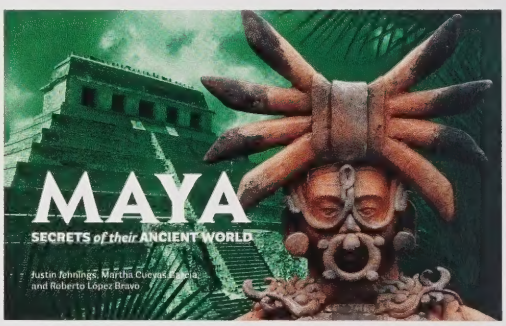
Pour en savoir plus ou pour réserver, veuillez composer le 416.586.5797.

For tickets, contact 416.586.5797 or go to **rom.on.ca/programs/lectures/**
For a complete list of lectures, see *Let's ROM*.

Exhibition curator Justin Jennings explains the Maya Long Count calendar.

Visites guidées en français
Avec les guides du ROM

Des tours de l'exposition *Les secrets de la civilisation maya* sont offertes en français le vendredi à 14 h (sup. 5 $). D'autres visites commentées, comprises dans le prix du billet d'entrée, sont offertes le vendredi (12 h, 16 h et 18 h), le samedi (14 h), et le dimanche (14 h).



Maya Souvenir Guide
Official Guide to the ROM's Maya Exhibition a National Bestseller

The exhibition guides to *Dead Sea Scrolls: Words that Changed the World*; *The Warrior Emperor and China's Terracotta Army*; and *Maya: Secrets of their Ancient World*, published by ROM Press, have become national bestsellers. *Dead Sea Scrolls* sold more than 50,000 copies. *The Warrior Emperor* reached number one, non-fiction, on the CBC bestseller list. In January 2012, *Maya* stood at number four on the *National Post* list. Available in English and French editions. At $5 each (tax included), the guides are another way the ROM is making Museum visits affordable.

ROM 100

Charles Currelly and the Beginnings of the Museum's First Century

The Royal Ontario Museum was established on April 16, 1912, by the signing of the *Royal Ontario Museum Act* in the Ontario legislature and officially opened to the public on March 19, 1914. The first ROM director, Charles Currelly, through his intelligence, charm, powers of persuasion, and stamina, amassed content for the new Museum. The following excerpt from the foreword to the Royal Ontario Museum Press fine edition of Currelly's memoirs, *I Brought the Ages Home*, describes that time:

Currelly portrait: ROM Archives. Excerpted text, Glen Ellis, foreword, *I Brought the Ages Home*, ROM Press edition

Dr. Currelly's course over the next years was remarkable, not only in terms of the wealth of artifacts and specimens he would acquire, but also his adventures—across oceans, deserts, and mountains, through villages and cities. His story is on an epic scale, replete with panoramic vistas and a cast of thousands. He encounters the superstitions and lore of local peoples—the terror of vampires, the dangers of sleeping near bewitched springs, even fear among villagers that he may be the prophesied enchanter. In his mingling he must accommodate local custom to accept with, if not delight, at least not with revulsion, the delicacy of a freshly plucked sheep's eye rolled in fat. Sometimes he is simply bewildered. When he advises an American clergyman's wife that her scarab is a forgery, she replies: "Oh, no. I bought it from my donkey boy, who said he stole it from your excavation, and he has such an honest face that I am sure he could not have been lying." In his accounts of fieldwork, the past sometimes rushes into the present unexpectedly, even horrifically. In Egypt, a worker finds a mummified hand, which upon removal of the wraps reveals "seven gold and jewelled bracelets on the wrist, the earliest worked jewellery that has been found in Egypt. It was the hand of the Queen of Zer." By contrast, Henhenet, a young wife of Mentuhotep II, is unveiled almost perfectly preserved.

It has been said that Currelly "got his hands in everything: construction of the buildings; designing showcases, galleries, and lighting; unpacking cases in the basement; ensuring the financial security of his staff; collecting and preserving treasures; begging for money; currying favour; courting benefactors; and uncovering forgeries." Through it all, his respect for antiquities was reverential: "Seeing and touching these marvels of the past was so great that I had a feeling one ought to fast, or to make some peculiar preparation before handling such priceless objects."

"Seeing and touching these marvels of the past was so great that I had a feeling one ought to fast, or to make some peculiar preparation before handling such priceless objects."

Dr. Currelly also understood the criticality of forests to the well-being of the planet. Literary critic and theorist Northrop Frye, editor of Currelly's memoirs, observed, in 1956, that the ROM director had the keenest interest in "the saving of threatened woodlots" and in "any measure that would help to make the trees grow again and the dried-up rivers run again." Currelly truly lived the Museum's ideals of understanding and respect for world cultures and the natural world.

GLEN ELLIS is head of the Royal Ontario Museum Press and executive editor of *ROM* magazine.

The ROM Press edition of *I Brought the Ages Home* is available at the ROM Museum Store, bookstores, libraries, and online.

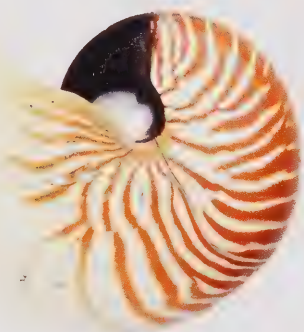
Nautilus

More than just a pretty shell

BY JANET WADDINGTON

Right: Cup made of nautilus shell that is carved, engraved, and rubbed with black ink and mounted in silver-gilt, 1699, Vienna, Austria. The carving retains some of the original tan-and-cream outer shell layer and reveals the beautiful nacreous (mother-of-pearl) inner layer that gives the pearly nautilus its name. It can be seen in the ROM's Samuel European Galleries.

Above: Fossil nautilus shell from Madagascar about 100 million years old showing an internal structure almost identical to that of a modern nautilus.



Left and far left: Adult nautilus shells, one cut to reveal the internal chambers separated by septa. A porous tube, the siphuncle, which connects all the gas-filled chambers, is used to help regulate the buoyancy of the shell. These adult shells measure about 16 cm across.

Long prized for its mottled creamy white-and-tan shell with a beautifully regular chambered interior, the chambered or pearly nautilus has been celebrated by artists and poets, its shells made into elaborate decorative works. Apart from being a fascinating creature in its own right, nautilus provides important clues to interpreting the fossil record. This cephalopod, whose living relatives include the octopus, squid, and cuttlefish, has roots that go back about 490 million years, into the Late Cambrian period, and six species of nautilus in two genera still swim the oceans today.

The nautilus uses its chambered shell to help regulate buoyancy. By adjusting the contents of individual gas-filled chambers, it is able to navigate ocean depths ranging from 300 metres to 30 metres or less. Nautilus could probably tell us plenty about enduring rapid changes in pressure! Spending much of its time in the relative safety of the cold and oxygen-poor deep waters around Pacific and Indo-Pacific coastal reefs, this mollusc rises to warmer waters to feed on crustaceans, slow-moving fish, and whatever else it can catch.

The female nautilus deposits her egg cases singly on coral reefs in shallow water—keep in mind that 30 metres is "shallow" to a nautilus. Scientists discovered only recently—in the late 1980s—that a baby nautilus can take 10 to 14 months to develop within its egg case. When it emerges, the young nautilus already has about a dozen chambers in its tiny 2-cm shell. As the animal grows, its shell broadens and coils around itself, and every so often, with mathematical precision, a new septum is added until there are about 32 chambers.

Cut shell: *Nautilus pompilius*, ROM 57849. Whole shell: *Nautilus pompilius*, ROM 61740. Nautilus shell cup: ROM 988.254.1.1–2, gift of Norman S. and Marian A. Robertson; certified by the Canadian Cultural Property Export Review Board under the terms of the *Cultural Property Export and Import Act*. Fossil nautiloid: ROM 56791

Below: Captive-laid nautilus egg cases with one broken open to reveal a dime-sized embryonic shell, which already has at least nine septa.

ALL IN THE FAMILY

How modern nautilus helps us interpret the past

Countless chambered fossil shells are found throughout half a billion years of life history. Without the nautilus as a living example, we would have been hard pressed to know what these shells represent or how the animals that made them lived.

Many chambered shells are straight cones rather than coiling around on themselves as do those of today's nautilus. But because the basic internal structure of such shells is similar to that of nautilus, we can tell that these were all shelled cephalopods.

All modern cephalopods are carnivorous predators or scavengers, and before big fish evolved, nautiloids (nautilus relatives) would have been among the major predators in the seas—some nautiloid shells from the Ordovician period measured up to three metres in length.

Knowing that the chambered shells represent cephalopods also helps us to interpret the ancient environments inhabited by nautiloids. All cephalopods today require salt water to survive. The presence of cephalopod fossils therefore indicates that the rocks in which they are embedded originated as seafloor deposits, helping us to track ancient seaways.

Above: Fossil nautiloids from Toronto (Late Ordovician, 450 million years old). These early nautiloids had a straight shell, but the chambers and siphuncle are still evident. The model above depicts how this animal appeared in the warm tropical sea that was Toronto at the time.

Below: Norbert the nautilus in his aquarium. ROM photographer Brian Boyle donned snorkel and mask to take the picture underwater.

REMEMBERING NORBERT

In the ROM's old Gallery of Invertebrate Fossils a number of salt-water aquaria held modern marine invertebrates, close relatives to the fossils on display. Because fossil nautiloids are common in Ontario's fossil record, the ROM tried for about a year to keep a living nautilus. Norbert arrived in February 1981. At the time, the gallery was closed for building renovations. Norbert's aquarium was fitted with a chiller to keep the water at the temperature he was accustomed to. He quickly settled into his new routine. He would come to the edge of the tank to be hand fed (thawed smelts and whole shrimp were on the menu, although he learned to prefer his shrimp peeled, thank you very much) and submitted to being held at the surface to have algae scrubbed off his shell. He definitely moped when our summer student left after pampering him all season. Sadly, it proved impossible to maintain the appropriate conditions to keep a live nautilus over the long term. As has since been reported for other captive nautilus, the ROM's nautilus lost its buoyancy control and its shell turned out at the lip as it grew. When he died, Norbert's shell was sent to a colleague who was studying nautilus growth, and ideas of trying to maintain a live nautilus so far from the sea were shelved.

Unlike other living cephalopods, which mature relatively quickly, produce large numbers of offspring, and then die, a nautilus can take 10 years to reach sexual maturity. It then lays only a few eggs a year for several years. But beyond this, the life history of nautilus is still not well understood. Wild-captured nautilus have been kept in captivity with little success.

Of the very few nautilus eggs laid in captivity, a small percentage have developed embryos. The first recorded hatching of a captive-laid egg was in 1988 when researchers began to realize that eggs needed longer incubation times and warmer water temperatures than the adults normally inhabited. That nautilus lived only a few months. The first to live for more than a year were hatched in 1991 and 1992.

Nautilus's low reproduction rate and the long time it takes to reach reproductive age, combined with the extreme popularity of its shell and the relative ease of its capture, make this invertebrate susceptible to over-harvesting. In 1987, Indonesia banned the collection and sale of nautilus within its boundaries, but surrounding countries have not followed suit. There is some pressure on CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (www.cites.org) to add nautilus to its Appendix II list of organisms that could become threatened if trade is not regulated. But more detailed information about its present abundance, distribution, life cycle, and trade status is required before this can happen.

For now, enjoy the beauty of nautilus in pictures and resist the urge to own a shell. o

JANET WADDINGTON is assistant curator in the paleobiology section of the ROM's Department of Natural History.

Intact egg case: ROM 61742. Broken-open egg case with embryonic shell: ROM 61741. Nautiloid model: Artist Georgia Guenther. Fossil: *Treptoceras crebriseptum*, ROM 52724

Authentic Chocolate

The Maya power drink, re-mixed

BY JAMES CHATTO

Enjoy a taste of the Maya-inspired treat at c5 with a spiced chocolate martini ($12) or a flan de chocolate ($8)—a baked chocolate-and-caramel custard

You have to love a culture that features a god of chocolate in its pantheon. Okay, strictly speaking, Ek Chuah was the patron deity of Maya cacao *planters* rather than cacao itself, among his many other attributes—but it's close enough. There was no human sacrifice on his feast day in the month of Muán, just a lot of sex and the ritual slaughter of a dog unlucky enough to have been born with a chocolate-coloured spot. The planters were not entitled to drink the chocolate they grew—it was reserved for men of more elite status, for whom it was sometimes mixed with vanilla, chili, cinnamon, wild honey, or maize gruel. Later, the Aztecs added another ingredient to make their chocolate even more special: blood drawn from the ear lobes of priests.

Ah, those quaint old recipes! But the real bore with reproducing authentic Mesoamerican chocolate drinks isn't finding a churchman willing to lend an ear. It's that a fermented, sun-dried, roasted, husked, but unpressed cocoa nib is so full of buttery fat it doesn't want to emulsify with hot water. Even when you've spent an hour grinding the warmed nibs to a smooth paste on your basalt *metate*, it won't dissolve. So you must beat everything together with a special mixing stick called a *molinillo* for at least another half hour and then pour the liquid repeatedly from one jug into another to create the ephemeral head of chocolate froth that was the true delight of ancient Maya connoisseurs.

Newly arrived Spaniards tended to shy away from the drink. "Loathsome," was the adjective chosen by friar José de Acosta, who tasted it first in Peru, "having a scum or froth that is very unpleasant to taste." But many of them soon grew to love it and to crave the energizing buzz of caffeine and theobromine at its bitter heart.

Not wishing to rely on hearsay, I determined to recreate the original drink for myself. David Castellan of Soma Chocolatemaker generously provided expert advice and a bag of sun-dried cacao beans from Lacondon, Mexico, which I dutifully roasted and husked to get to the nibs. The ROM's executive chef Corbin Tomaszeski gave me the run of his kitchen and the invaluable assistance of muscular sous chef Carlos Ventura. I found a metate in a Queen Street West store, complete with its basalt rolling pin. It took Carlos a good half hour to grind the waxy nibs to a paste but we cheated with the hot-water-and-spice frothing by using an industrial-strength blender instead of a *molinillo*. Even so, the brown, iridescent foam lasted only a moment on the surface of the drink before we had to beat it again. It tasted bitter, to be sure, and a bit watery, but when the wonderful, complex, adult flavour of pure chocolate kicked in, barely influenced by the spices, it was so intense, and stayed on my palate for an hour. Carlos also took a sip and his eyes lit up. "I remember that taste from my childhood in El Salvador," he exclaimed.

The Dutch, the English, and the Swiss have changed chocolate out of all recognition in the last 200 years, but it was good to discover that the ancient Mexican drink still had the power to energize and enthrall, even if made without sugar or milk. Or blood. o

JAMES CHATTO is a Toronto-based food writer and the editor of *harry* magazine.

ROM MEMBERS

ROM Members receive a 10% discount in c5 Restaurant Lounge and Food Studio. A special Maya-themed menu is available throughout the run of *Maya: Secrets of their Ancient World*.

©Dragan Trifunovic/iStockphoto

The Wonder of It All

Making sense of our connection to beetles and starry, starry nights

BY MARK KINGWELL

Illustration, Bob Hambly

The English biologist J. B. S. Haldane, asked for a scientific opinion about the Divine Creator, is supposed to have replied: "If He exists at all, He must have an inordinate fondness for stars and beetles."

Consider just the beetles for the moment. There are some 400,000 known species, more than a third of the current recorded total of all insects. Genesis 1:27 says that God "created man in His own image," but on the evidence He was a lot more fetched by mandibles and sheathed wings. (If nothing else, this gives new meaning to Gregor Samsa's famous metamorphosis.)

God's existence and precise visage aside, why so many beetles? What purpose could they possibly serve? The problem is that teleology, the theory of final ends, is a rough beast in the world of modern science: it slouches more than it stands up straight. We don't know, and can't know, the purpose of widely varied species. What we can know, and do know, is that having such a large range is a good thing for the planet.

The term *biodiversity* dates from just the mid-1980s but the issue is as old as life itself. Environments and systems that support a wide range of life not only run more evolutionary experiments, entering more runners in the competitive race for adaptive advantage, they also erect bulwarks against disease, extreme weather, and new predators. The more species a system has in play, the more likely it is to survive—and thrive. Thriving here means persisting over time, which is the only purpose you can talk about when it comes to evolutionary biology.

Humans like to insist there must be some higher purpose to life, at least sometimes, even as we are really bad at maintaining basic biodiversity. The rate of species reduction has been highest by a wide margin during the time humans have dwelt on this mortal plane. Many scientists believe we are currently in a period of "mass extinction" that will cut the species range by half within 100 years, most as the result of direct human impact.

Well, so what? Darwinian roulette is a big game and it's all about weeding out the unfit. Far less than one percent of the world's species are still extant. So long, losers! Thanks for spinning the wheel, dodoes!

Alas, it's not that simple, even from the strictly human point of view. Loss of biodiversity is intimately connected to environmental degradation that affects every living thing. And human ingenuity and adaptability have limits with respect to natural circumstances. You can't just iPad past the global water shortage or TED-talk your way out of climate change. Humankind's propensity for viewing itself as distinct from the rest of nature is a sprung trap: the more we indulge *Homo sapiens* exceptionalism, the more we put ourselves at risk.

That's the instrumental argument in favour of biodiversity, and it's a good one. But, in a sort of reverse irony, there's an even better one. One of the higher purposes that humans like to endorse is what the ancient Greek philosophers called *thaumazein*: the sense of wonder. The range of life this planet has supported, and the 500 million years it has been doing it, are beautiful facts in and of themselves. The human capacity to entertain that thought—indeed, to entertain any thought at all—is a natural phenomenon worthy of reverence.

You could even say that this solves the riddle of purpose in the only way that makes sense. Immanuel Kant agreed with Haldane about stars. "Two things awe me the most," the German philosopher said, "the starry sky above and the moral law within." The final end of our species is not just to survive, but to be here and bear witness to the virtually limitless wonders of life, including our own.

Humans are the world becoming conscious of itself. What purpose could be higher than that? ○

MARK KINGWELL is a professor of philosophy at the University of Toronto; a new collection of his essays, on democracy and the human imagination, will be published this fall.

Glimpsing Eternity

Notes from the Museum's keeper of gems

BY LEE-ANNE JACK

Katherine Dunnell
MINERALOGY TECHNICIAN
Department of Natural History

Education

2012
Final exam pending, FCGmA Gemmology certification, Canadian Gemmological Association

1996
BSc (Honours) in geology and geochemistry, University of Windsor

1992
BA (Honours) in physical geography, University of Windsor

HAVE JEWELLERY OR GEMSTONES THAT YOU NEED IDENTIFIED? Check out the schedule for the next ROM ID Clinic at **rom.on.ca/programs/id_clinics.php**

It's hard to miss the spectacular engagement ring on Katherine Dunnell's finger, its unusual purple gem glistening as it catches the light. A mineralogy technician who has shared the responsibility of caring for the ROM's 77,000-piece mineral collection since 1997, Dunnell knows her gems down to their crystalline essence. At eight gem and mineral shows a year, she and her colleagues in Earth Sciences display the ROM's collection and scour the offerings looking for new specimens.

"These shows are an education on who is producing what," says Dunnell. Right now, China is mining beautiful display-quality minerals. Keeping on top of new finds enables the team to get pieces into the collection while they're still affordable. "It's supply and demand, and once mining stops or moves on, the prices tend to go up on the fabulous minerals that came out," she says. The shows are also a chance to glimpse incredible things. The talk of the circuit right now? "There are raspberry Tanzanian spinels and Nigerian yellow tourmalines I lust after for the collection."

Dunnell is partial to spinels, the gemstone in her ring, describing the normally multi-coloured stones as under appreciated. Found in gem gravel along with sapphires, these gem minerals have been used in crown jewels and Mughal courts, and historically misidentified as rubies. "They're gorgeous," says the Windsor, Ontario, native. "I think spinel has gotten a bum rap because synthetic colourless spinel was historically being used as a diamond simulant. The coloured varieties of spinel have a more interesting depth of colour than sapphire."

Knowing what not to buy—keeping up on the latest treatments and enhancements—is a key part of building the gem collection, although the ROM does purposely pick up examples of enhanced and synthetic gems for its teaching collection, most recently glass-filled rubies, which regularly turn up on the market.

Dunnell began specializing in gemmology after arriving at the Museum, where a colleague noticed she had the eye for it. Now, it's not just ROM staff knocking on Dunnell's door for advice. All three of Toronto's jewellery schools send classes to learn the science and mineral side of their craft from the team in Earth Sciences. She herself is taken with design of all kinds, evident in the décor of her calming office in the ROM's basement.

This 10-carat black opal ring set in platinum is on display in the ROM's Gallery of Gems and Gold. It was made for Birks and Sons by Peter Kochuta.

A great proponent of Canadian jewellers, Dunnell dispels the idea that a custom piece is necessarily pricey. "We have world-renowned goldsmiths here [in Toronto] eking out a living," she says. A custom-made piece has the added advantage of supporting Canadian design and manufacturing.

But buying gems and jewellery isn't like learning which flat-screen TV is the best. "An engagement ring is the third-biggest purchase most men will make after a house and a car, yet there's a real lack of inherent knowledge on what to buy and where to go," she says. "You have a relationship with your dentist and your GP. You should have a similar relationship with a jeweller." It was advice her parents, who owned a collection of Victorian mourning rings, lived by, and perhaps part of what attracted her to gemmology.

Next on Earth Science's wish list for the ROM is the gem mineral–heavy Kirwin collection from Thailand, which comes with the added bonus of a revamped collection room. It will be a great addition to a collection that already holds its own in the world. ○

To learn more about spinels, search the ROM's blog at **blog.rom.on.ca**

The task of identifying new mineral elements in a specimen got easier in 2010 with the acquisition of state-of-the-art lab equipment, which makes the ROM one of the few museums capable of single-crystal X-ray diffraction. Watch for details in future issues of *ROM* magazine about how the Museum is using this cutting-edge technology.

ROM M47968. Gift of Mrs. Beryl Ivey

BRITISH COLUMBIA

Jean-Bernard Caron
CURATOR
Paleontology

Famous for their snow-capped peaks and a favoured destination for travellers, the Canadian Rocky Mountain Parks have been a hotspot for ROM paleontological research since 1975. Collaborating with an international group of experts, Jean-Bernard Caron continues to lead ROM field expeditions to the world-famous Burgess Shale, a 505-million-year-old paleontological deposit in Yoho National Park. His latest field research aims at better understanding the factors contributing to the distribution of Burgess Shale–type fossils across the Canadian Rockies. Caron has also been studying the Museum's Burgess Shale fossils since joining the ROM in 2006 and publishing his results in high-profile journals such as *Nature* and *Science*.

U.S.

Arni Brownstone
ASSISTANT CURATOR
Ethnology

Plains Indian pictographic paintings of war deeds comprise one of the great bodies of North American indigenous art. Painted on hide robes, warshirts, tipi liners, and tipi covers, these large works are composed of a multitude of small, detailed, and often faded figures. Our ability to analyze and understand these works is greatly hindered because they do not reproduce well in photographs. In the course of researching the paintings, Arni Brownstone produces precise electronic illustrations based on a combination of Mylar tracings and digital photographs of the originals. In October 2010, he photographed and traced three robes in the National Museum of the American Indian, the U.S. National Museum of Natural History in Washington, and the Reading Public Museum in Pennsylvania.

NUNAVIK

Doug Currie
SENIOR CURATOR
Entomology

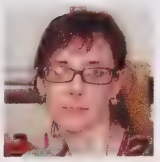
Doug Currie studies the taxonomy and evolution of biting flies. His current research, a joint project with biologists from McGill University, focuses on how arthropods respond to climate change in Canada's North (see *ROM* magazine, Winter 2010). Currie has led field crews to Moosonee, Ontario; Churchill, Manitoba; and Norman Wells and Banks Island, Northwest Territories. In 2012, he will be leading field crews to Kuujjuarapik and Kuujjuaq in Nunavik.

U.S. AND RUSSIA

Corey Keeble
CURATOR
European Decorative Arts

Corey is bringing to a close several years of research on a variety of projects: European gunlocks, the Roy G. Cole collection of virtuoso gunsmiths' work, Judaica, the history of fire-fighting apparatus in Toronto, Russian icons, and the naval events of the Russo-Japanese War of 1904–5 depicted in three albums of watercolours. During the course of his studies, he has researched historic warships in Philadelphia; Camden, NJ; Fall River, MA; Wilmington, NC; and Norfolk, VA, and studied Russian icons in collections in St. Petersburg, Moscow, Uglich, Yaroslavl, Kostroma, and Kizhi Island.

OMAN



Sarah Fee
ASSOCIATE CURATOR
Textiles

In November 2011 Sarah Fee travelled to the southern Arabian nation of Oman to interview traditional weavers. For hundreds of years weavers along Oman's coast facing the Arabian Sea and the Indian Ocean have produced striped and checked turbans and wrappers of cotton and silk. Many of them created items for export. Fee was especially interested in textiles made for the East African market. Though only a handful of these weavers still work in the region today, Fee was able to obtain much historic information from them, as well as samples of the iconic cloth types that have been made for centuries.

Where in the world are they?

The who, what, and where from our international curatorial team

Doug Currie: Brad Hubley. Black fly: S. Marshall. Sarah Fee: Evelyn Fee. Weaver: Sarah Fee

The IMPORTANCE of DESIGNER LABELS

Almost nothing was known of colonial furniture maker ***John Tulles****'s life, but, searching through archives, Ross Fox has uncovered new details—and attributed three pieces in the ROM's collections to Tulles*

BY ROSS FOX

Courtesy Nova Scotia Museum

Tulles produced some of the finest furniture to be identified with a Canadian cabinetmaker in the early 19th century

Identifying the work of most early Canadian furniture makers is frustratingly difficult. Craftsmen who applied paper labels to their pieces were rare in colonial Canada, but one who did was John Tulles.

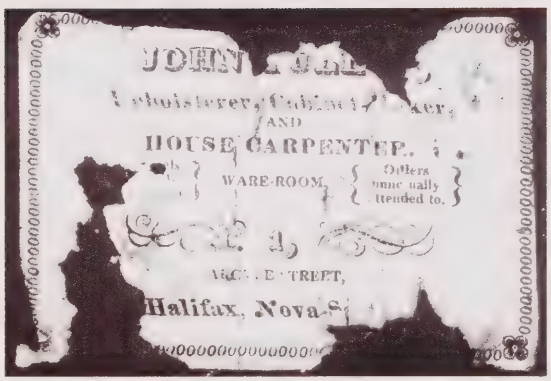
For a brief time, Tulles (1771–1827) worked in the Halifax partnership of Tulles, Pallister & McDonald, and two labelled pieces made by the partnership are known—a drum table and a tall clock. A single card table labelled by Tulles working independently is also known. By studying these pieces, antique dealers Henry and Barbara Dobson were able to decipher the signature features of Tulles's work, and subsequently to identify a larger body of his furniture.

Relying on the Dobsons' pioneering work, published in 2010 in the book *Heritage Furnishings of Atlantic Canada*, I've recently been able to attribute two otherwise unidentified pieces in the ROM's collection to Tulles, and to identify a third piece that may have been by him as well.

When I started looking into Tulles, almost nothing was known about the man himself. Unfortunately, archival records from Nova Scotia in the early 19th century are sparse, and surviving runs of local newspapers, which are often good secondary sources of information, are incomplete. It makes the study of furniture from Halifax challenging. But with careful intermittent digging over the past several years, I have been able to uncover a few additional documents and some newspaper references that provide new insights into the cabinetmaker's life and work.

On December 26, 1771, John Tulles was born in Ferryport-on-Craig (known today as Tayport) in Fife, Scotland, three miles across the Firth of Tay from Dundee. His parents were John Tulles (also Tullas, Tullis) and Mary Weyms (Weems, Wemyss). There is no other known record of Tulles's life in Scotland. The considerable skill evident in his Canadian furniture suggests he was thoroughly trained as a cabinetmaker in his homeland before emigrating to Canada. But where he apprenticed remains uncertain. Ferryport-on-Craig is unlikely as it was a mere village with a population of only 875 in 1792. Cupar in Fife, Dundee, or even Edinburgh would seem more likely.

The next time Tulles's name is documented he is already in Canada. In 1806, he signed a contract in Montreal with Peter Grant to construct a building at L'Orignal on the Upper Canadian side of the Ottawa River.[1] Grant was a fur trader who had recently settled near Montreal after spending two decades in the service of the North West Company in the upper Great Lakes region, and the building at L'Orignal may have been a trading post. In Scotland, particularly in provincial centres, it was not uncommon for wrights (or joiners, as they were called in Canada) to train as both house carpenter and cabinetmaker. This must have been the case with Tulles, who worked in both woodworking sectors throughout his career.



Opposite: Label on a tall clock by Tulles, Pallister & McDonald, Nova Scotia Museum.

Left: Label of John Tulles, which is still on a card table in a private collection.

Tulles turns up next in Halifax, Nova Scotia, named in the baptismal record of his daughter Jane at St. Matthew's Presbyterian Church on September 30, 1810. I could find no marriage record—Tulles must have married before emigrating. When Tulles arrived in Halifax he would have found a thriving port town of about 10,000 people. The sole base for the Royal Navy in British North America, Halifax served throughout the Napoleonic Wars as a vital commercial entrepôt for trade with the United States, the West Indies, and Great Britain. Local merchants also profited greatly from privateering, or legalized piracy, especially during the War of 1812.

Following wartime prosperity, though, the city experienced a prolonged post-war economic stagnation. In this environment of boom and bust Tulles produced some of the finest furniture to be identified with a Canadian cabinetmaker in the early 19th century. But he was not without local competitors.

Courtesy Henry and Barbara Dobson

Left: *View of Halifax from the Harbour* (c. 1828) by John Hawkins Gascoigne (1811–1893).

Halifax already supported a robust furniture trade. Amos Lovett, Thomas Carswell, James Frame, and James Scott were among the established cabinetmakers Tulles would have encountered on his arrival. Others active during the period of his residency included Thomas Adams, John Cummings, and William Gordon. Many of the names are Scots and presumably, like Tulles, these craftsmen were recent emigrants from Scotland.

At first, Tulles worked in partnership with Thomas Pallister and an unidentified McDonald as Tulles, Pallister & McDonald, cabinetmakers and upholsterers. But the enterprise was not long-lived. According to the February 28, 1812, edition of the Boston newspaper the *New-England Palladium*, the workshop was destroyed by fire on January 23 of that year. This must have led to the immediate dissolution of the partnership because by February 5 an advertisement in the *Nova-Scotia Royal Gazette* shows that Pallister was working alone, as almost certainly was Tulles.

While Tulles lived in Halifax, the phenomenon of the furniture wareroom became established in the city, about a decade after it had reached Boston and Montreal. Until then, furniture was produced and retailed in small independent shops, where the pieces were usually bespoke (made to order). As retail warerooms or showrooms caught on, furniture was largely sold ready-made[2]—imported from England, produced by journeymen cabinetmakers on the premises, or made by local outworker cabinetmakers. Auction ads for furniture regularly underscored the word "English," but reference to the place of manufacture was omitted for most locally made items, implying a perceived higher standard of quality for imports, whether merited or not.

Competition must have been intense. We know that Tulles operated his own wareroom, as indicated on his label. So did William Gordon; Hamilton, Stewart & Co.; and W. & A. Lovett. These three advertised in newspapers whereas, apparently, Tulles did not, except in his partnership with Pallister and McDonald. This might explain why, unlike his competitors, Tulles used paper labels. It may have been a matter of different marketing strategies.

From references not related to his business we can glean something of Tulles's social status in Halifax. In 1816, he served as an administrator of the estate of Alfred Gordon Adams, along with Miles W. White and Jared Ingersoll Chipman.[3] Adams was an architect and builder, White a merchant, and Chipman a barrister. That same year Tulles was a witness to a marriage bond for Alexander Gowrie, a carpenter, and in 1817, for Thomas Mackie, a grocer.[4] As well, Tulles was a member of the North British Society, a highly influential charitable organization dedicated to the support of the local Scots community,[5] and this membership would have facilitated his social and business advancement.

The final records I found were death notices. Tulles's wife, Jane, died in 1825 and Tulles himself on January 28, 1827.[6] His estate papers consist of his will, probate papers, and an account of his furniture that was sold at auction.[7] The forms mentioned reflect the kind of furniture he was known to have made (detailed in the only ad for Tulles's goods that I could find, which ran May 23, 1818, in the *Acadian Recorder* announcing that a block of furniture by Tulles was to be sold on the 29th). The most significant pieces included a hair sofa, a secretary (or so-called butler's desk), two easy chairs, three chests of drawers, a Pembroke table, a set of dining tables, a corner cupboard, a liquor stand, and an eight-day (tall) clock. The estate was to be divided equally among his three children: Mary Weyms, Jane, and John Jr. But perhaps most poignant was the will's first directive: "That my body be interred in a plain but decent manner near to the remains of my beloved wife."

To this day, no specific pieces of furniture have been identified with any of the other cabinetmakers mentioned in this article. What the most successful marketing strategy was at the time Tulles was making furniture has yet to be properly assessed. But Tulles's use of labels—like Thomas Nisbet of Saint John, New Brunswick, who labelled a large number of his pieces—served ultimately to guarantee him especially high recognition in the history of Halifax and its early furniture. ○

Courtesy Library and Archives Canada

TULLES FURNITURE AT THE ROM

The author has recently identified these three pieces in the ROM's collection as Tulles works.

{*No. 1.* CARD TABLE}

The benchmark piece used to identify Tulles furniture is a card table in a private collection that bears Tulles's label (see label on page 17). Comparison of a ROM card table with the benchmark table and other known Tulles pieces shows that Tulles must have made the ROM piece.

The front and sides of the apron have line inlay ending in double curves enclosing an arrowhead motif, which resembles that on another card table in the Tulles group.[8] Here, ebonized (blackened) inlay is juxtaposed against lighter-coloured but relatively dark mahogany. Light maple on dark mahogany was used in the benchmark piece.

The ROM table has a D-form top which, when opened, is square with rounded corners, compared with the canted corners on the benchmark table, which opens into an octagonal top. The D-form was popular in both England and Scotland,[9] a preference that extended to Canada. The octagonal form, though English in origin, was more prevalent in Scotland and New York City, and, except for Tulles, apparently was little used in Canada. The essential designs of both card tables are characteristic of the early Regency period.

ROM 981.83.1

{*No. 2.* SOFA TABLE}

A second ROM piece, a sofa table, shares design features with several other sofa tables from Halifax that are tentatively attributed to John Tulles.[10]

Developed in England during the 1790s, sofa tables—which were then placed in front of a sofa and not behind as in later practice—gained widespread acceptance over the succeeding decade. An example is described and illustrated in Thomas Sheraton's *The Cabinet-Maker and Upholsterer's Drawing-Book* of 1803. In Halifax, an early reference to the form occurs in an 1811 auction of household furniture belonging to Captain John Cochet R.N.[11] Military and naval officers and colonial administrators posted to the colonies often brought their furniture with them, but auctioned it off before returning home. It is probably safe to speculate that Captain Cochet's sofa table was English. Such imports helped colonial cabinetmakers keep up to date with English design trends.

Like all sofa tables, this one consists of an elongated upper frame with two drawers on one of the long sides, two false-drawer fronts on the opposite side, and drop leaves on the short ends.

Supports can vary greatly, but the ROM's sofa table, like related sofa tables from Halifax, is characterized by trestle end supports with down-swept legs and a high, turned horizontal stretcher (though in some cases, the stretcher is flat). It belongs to a basic type that won widespread acceptance in England during the early Regency period.

Aside from the overall form of the table, indicators of a probable connection with Tulles rest with motifs such as the inlaid diamond shape of the outside drawer posts and the triple line inlay of the legs.

ROM 978.250.3

{*No. 3.* BOOKCASE}

This low, open (or dwarf) bookcase can be confidently attributed to Tulles.

Made of bird's-eye maple veneer on a pine carcase, the bookcase has ebonized line inlay on the front stiles that ends in a fleur-de-lis motif above. On the flat top, similar line inlay scrolls at the front corners where it flanks a double lily motif.

The contrast of dark inlay against light wood imparts a sense of clarity and elegance to the overall design, especially when the inlay is as finely rendered as Tulles's. Ebonized inlay against satinwood was well suited to the neoclassic aesthetic of early Regency England, a look recommended in *A Collection of Designs for Household Furniture and Interior Decoration, in the Most Approved and Elegant Taste* (London, 1808) by the persuasive design arbiter George Smith: "With satin and light-coloured woods the decorations may be of ebony or rose-wood."

Here, Tulles used a less expensive local wood rather than a tropical one to achieve a comparable effect. Different and often colourful combinations of mahogany and maple are another hallmark of his furniture. ○

Notes

1. Bibliothèque et archives nationales du Québec, Centre d'archives de Montréal, Greffe Jonathan A. Gray, 26 February 1806.
2. Nancy Goyne Evans, *Windsor-Chair Making in America: From Craft Shop to Consumer* (Hanover and London: University Press of New England, 2006), 108.
3. *Nova-Scotia Royal Gazette* (Halifax), 1 February 1816.
4. Nova Scotia Archives, Marriage Bonds, 19 January 1816 and 4 December 1817.
5. James S. MacDonald, *Annals of the North British Society of Halifax, Nova Scotia* (Halifax: John Bowes, 1894), 71. The North British Society, which still exists, is the oldest Scots Heritage Society outside Great Britain.
6. *Acadian Recorder* (Halifax), 1 October 1825; 3 February 1827.
7. Nova Scotia Archives, Estate Papers, Halifax County, Vol. 1 (1750–1841), T72.
8. Henry Dobson and Barbara Dobson, *Heritage Furnishings of Atlantic Canada* (Kingston, ON: Quarry Heritage Books, 2010), 254–58.
9. Mary Ann Apicella, *Scottish Cabinet-makers in Federal New York* (Hanover and New London: University Press of New England, 2007), 121–22.
10. Dobson and Dobson, 271–72, 286–87.
11. *Nova-Scotia Royal Gazette*, 12 April 1811.

ROM 987.259.1.1

THE ORIGINS OF MODERN DIVERSITY

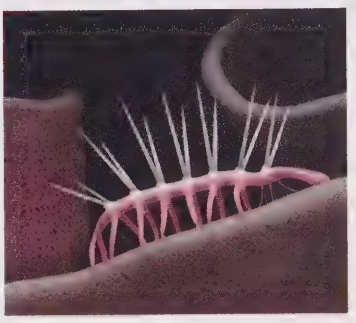
Deciphering clues from the Burgess Shale to understand early life

BY JEAN-BERNARD CARON

Nectocaris pteryx from the Burgess Shale, previously known from a single specimen, has now been reinterpreted as a primitive squid-like mollusc thanks to new specimens collected by the ROM. Specimen length: 58 mm.

ROM 59660, photo: Jean-Bernard Caron

DRAMATIC PROGRESS IN RECENT YEARS, IN MANY CASES THANKS TO NEW SPECIMENS COLLECTED BY THE ROM, HAS LED TO THE REINTERPRETATION OF A NUMBER OF PUZZLING BURGESS SHALE ORGANISMS AS PRIMITIVE OFF-SHOOTS OF MODERN ANIMAL LINEAGES

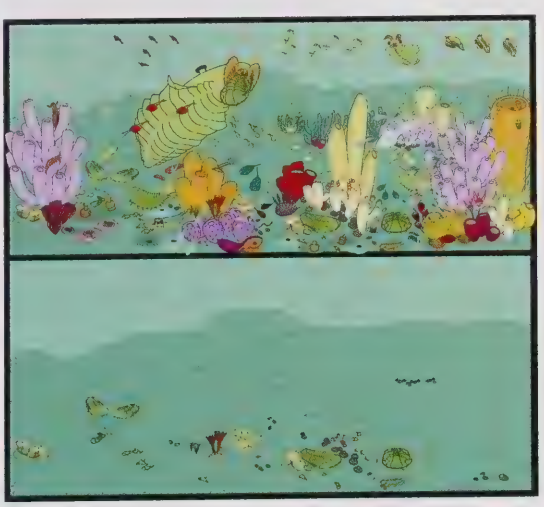


Iconic Burgess Shale species
Top: *Marrella splendens*
Centre *Sanctacaris uncata*
Bottom *Hallucigenia sparsa*.

Very few places on Earth remain unexplored. And we've seen that everywhere, even in the most extreme environments, from the tallest mountains to the deepest mines and oceans, life is conspicuous and often plentiful—so much so that despite all our exploration we still don't know exactly how many species inhabit our planet today. Some experts say that up to 100 million or more species are yet to be discovered. Astronomically large as that may sound, this number would certainly be dwarfed if all species that once populated our planet but are now extinct, could be accounted for.

The amazing diversity and abundance of life in our modern world is a result of complex processes—environmental and evolutionary—operating over billions of years. If only a time machine could allow us to see exactly how life has changed through the ages; alas, this is still the realm of science fiction. Instead, paleontologists must use clues from the past to painstakingly piece together the story of how life developed on Earth.

Our slow process of learning about early life is helped considerably by unusual fossil deposits such as the Burgess Shale in Yoho National Park, British Columbia—a site that defies all paleontological norms. Studying its fossils and the rock layers in which these organisms were preserved is fast-tracking our understanding of the most extraordinary early episode of life's experimentation: the appearance of complex animals during the so-called Cambrian Explosion about 505 million years ago.



Fossilization filters
The bottom view represents what we would know of the Burgess Shale community without its exceptional preservation of soft-bodied organisms—typical of a normal fossil deposit.

Fossils, much like DNA evidence at a crime scene, are the staples of any paleontological investigation. And as with many police investigations, the situation paleontologists typically find at the scene is one of limited clues, fewer as we move back in time, and with a lot of data missing.

That's because becoming a fossil is not easy—it requires a lot of luck and patience! From the time of death and burial, through the fossilization process, and right up to the final discovery of the fossilized remains, things can go terribly wrong. If by chance, an organism lived in or close to a body of water and happened to be buried quickly, it might be preserved. But even then, the story is far from over . . . after burial, it is far more likely that biological, physical, and chemical processes would inexorably destroy the buried remains bit by bit, molecule by molecule, until in time there would be not a single clue left to indicate that the creature had ever existed.

Most of the elements common to all life forms are usually released to the Earth after death or are directly recycled by other organisms, in processes that have been ongoing since the origin of life itself. For animals, soft tissues such as muscles, skin, or internal organs are usually the first bits to be scooped away by scavengers and bacteria. As a result, the animal fossil record is overwhelmingly biased toward the preservation of forms with mineralized parts, such as shell and bone. Unfortunately for paleontologists, up to 99 percent of organisms living today—including jellyfish and worms, for instance—have absolutely no mineralized parts, and this probably applied in the past as well. Paleontologists of the future when excavating rock layers that represent some of our richest modern ecosystems would probably be hard pressed to fathom what those environments might have looked like originally. They would find it even more difficult to assess how the ecosystems would have functioned.

To understand the difficulties involved, imagine trying to understand what lives in and around the fringing coral reef of a modern tropical island by looking at what washes up on the beaches. With luck, you might find a few empty snail or clam shells, some bits and pieces of crab carapaces, fragments of corals and sea

Recreated Burgess Shale communities and *Sanctacaris uncata* reconstruction © Marianne Collins. *Marrella splendens* and *Hallucigenia sparsa* reconstructions courtesy Mieke Doyle

Newly developed reconstruction of the Burgess Shale community for the Virtual Museum of Canada Burgess Shale website developed by the ROM and Parks Canada. *Nectocaris pteryx* is seen swimming near the centre.

urchins—all organisms that possess mineralized skeletons. If you are very lucky, you might even find the remains of a few organisms with unmineralized, but tough, decay-resistant skeletons, such as sea fans and some sponges. But this would be a poor representation of the total reef community, which teems with life of all varieties, including an enormous diversity of soft-bodied organisms.

Only in very rare circumstances are soft tissue remains found in the fossil record. Rarer still are instances in which a large number of soft-bodied organisms of different species, representing entire populations and communities, have been preserved in the same place. Called conservation *Lagerstätten* (from a German word meaning "mother lode"), such sites are truly amazing time capsules of past ecosystems, which, for reasons not entirely clear to science, have been spared from most of nature's destructive forces. The Burgess Shale is one of the best-known fossil *Lagerstätten* in the world, but Canada hosts some other spectacular sites dating from the Ediacaran, Devonian, and Carboniferous periods. These include, respectively, Mistaken Point in Newfoundland (575 to 560 million years ago), Miguasha in Quebec (380 million years ago), and Joggins in Nova Scotia (315 million years ago). These sites preserve a far more complete view of the diversity of life that existed in the past than do normal fossil deposits of the same age. They represent science's best reference points and clearest views of some of the most important evolutionary events in the history of life.

Fossils from the Burgess Shale and many other locales will figure prominently in the future Peter F. Bronfman Gallery of Early Life. In the gallery, the story will begin roughly 3.5 billion years ago with the oldest fossil evidence of cellular life, about a billion years after the formation of the Earth, and move forward through time to just before the evolution of dinosaurs a mere 250 million years ago. For the first nearly 3 billion years of the story, life on Earth remained generally inconspicuous and simple, dominated by microscopic forms such as bacteria.

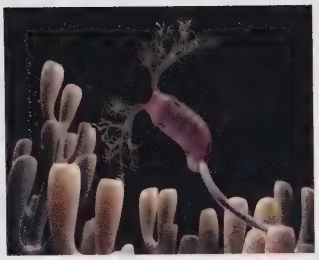
Then, starting around 575 million years ago during the Ediacaran period, the appearance of large soft-bodied multicellular organisms up to a metre in length opened a new evolutionary chapter. The oldest and most impressive concentration of fossils representing these life forms is located at Mistaken Point, along the rugged southern coastline of the Avalon Peninsula, Newfoundland. The ROM holds a unique collection of fossil specimens from this extraordinary locality as well as a spectacular 46-square-metre (500-square-foot) slab taken from Mistaken Point's most abundantly fossiliferous surface—both of which will be displayed. The alien-looking organisms that once inhabited seafloors had relatively simple anatomies—they did not possess a gut for digesting food, or show any of the key characteristics of most living animals, such as eyes or limbs. Few were capable of moving along the seafloor and there is no evidence that any of them could actually swim. Some of these organisms might represent primitive members of animal groups we know today, but nobody knows for sure how these strange creatures fit into the tree of life. Their complete demise at the end of the Ediacaran period just adds to the mystery of their appearance in the fossil record. The rise of unambiguous animals at the beginning of the Cambrian period, about 542 million years ago, was a fundamental turning point in evolution, and the Burgess Shale is one of the best places to study it.

Since the ROM hosts the

THE ROM HOLDS THE LARGEST COLLECTION OF BURGESS SHALE FOSSILS IN THE WORLD, estimated at around 150,000 specimens. The collection is held in trust on behalf of Parks Canada. In anticipation of the ROM's future Early Life Gallery, where highlights of this collection will be showcased, visit our new Burgess Shale website: **burgess-shale.rom.on.ca** to learn more. Important new discoveries are being made every year. Check out the latest findings at **rom.on.ca/collections/research/jcburgess.php**.

New species described from the ROM collections. Cluster of four specimens of *Siphusauctum gregarium*, nicknamed the "tulip-animal." Height of largest specimen: 120 mm.

Community reconstruction courtesy Phlesch Bubble. Tulip animal, ROM 61423; photo: Jean-Bernard Caron



A new addition to the Burgess Shale menagerie, *Herpetogaster collinsi* is a strange-looking animal with tentacles and a stalk. Specimen length: 46 mm.

largest collection of Burgess Shale fossils in the world, and its curators have conducted fieldwork there beginning in 1975, the story of the Burgess Shale will take centre stage in the Early Life gallery. Hundreds of thousands of fossils representing a myriad of species of soft-bodied algae, sponges, worms (annelids and priapulids), primitive arthropods (a group that today includes insects and shrimps), and primitive members of the group humans belong to, the chordates, have been collected.

Our collections and fieldwork have helped to place the ROM as a leader in early-animal evolution studies, and from our research, we know that 505 million years ago, the organisms of the Burgess Shale formed a thriving, complex undersea community in which large swimming predators with fearsome claws cruised above a densely inhabited seafloor. About 200 species have now been described and this number continues to grow with continuing research and fieldwork.

Traditionally, one of the most contentious aspects for scientists studying Burgess Shale fossils has been trying to understand their affinities with modern-day animals. Many Burgess Shale organisms show combinations of characters not typically encountered in living organisms, making it difficult to classify them in a system based on modern groups. This has been interpreted by some influential thinkers as evidence that animal diversity during the Cambrian might have been greater than that of today. Dramatic progress in recent years, in many cases thanks to new specimens collected by the ROM, has led to the reinterpretation of a number of puzzling Burgess Shale organisms as primitive off-shoots of modern animal lineages. Previously enigmatic animals such as *Odontogriphus omalus* and *Nectocaris pteryx*, for example, are now regarded as early molluscs.

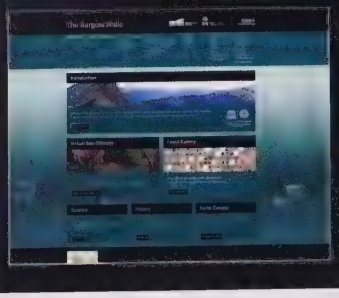
Others remain difficult to interpret and classify, including two newly described species discovered by the ROM. One is a tulip-shaped animal called *Siphusauctum gregarium*. Its unique set of characters sets it apart from all known groups. The other is an animal named *Herpetogaster collinsi*, named after Desmond Collins—founder of the ROM's Burgess Shale collection. This animal is thought to share affinities with both echinoderms (a group that includes the starfish) and a small group of marine animals called hemichordates, but the exact connection remains difficult to establish. In both cases, there is a lack of comparable material. The discovery of similar species elsewhere might one day help to elucidate the affinities of these organisms.

Despite the oddity of some of its constituent species, the Burgess Shale biota is typical of Cambrian marine communities worldwide. Examples of Burgess Shale–type fossils are now known from Australia, China, Russia, Europe, and elsewhere in North America, and this reinforces the view that the Cambrian Explosion was a global phenomenon.

The animals that appeared during the Cambrian period paved the pathway toward our modern ecosystems. The ancestral roots of all animals alive today, including humans, are deeply entrenched in the Cambrian Period. The Burgess Shale and its fossils shine a strong beam of light onto those transformational times and tell us a great deal about where humans ultimately come from. ○

DISCOVER OUR ROOTS ONLINE

Look into the Past through the Burgess Shale Website **burgess-shale.rom.on.ca**



On December 1, 2011, the ROM and Parks Canada launched the Virtual Museum of Canada Burgess Shale website, an online initiative marking the 30th anniversary of the Burgess Shale's status as a UNESCO World Heritage Site. Created with the support of Canadian Heritage, the site aims to provide the most comprehensive online content on the Burgess Shale and its biota (in English and French).

- The **Virtual Sea Odyssey** allows visitors to experience the often bizarre-looking creatures of the Burgess Shale as they might have lived in their environment 505 million years ago.
- The **Fossil Gallery** provides information on almost every species ever described from the Burgess Shale, including spectacular animations and reconstructions of close to 70 different species.
- The **Science** section explains the general scientific context of the Cambrian Explosion and summarizes scientific research on the Burgess Shale.
- In the **History** section, 125 years of fieldwork and research is covered; includes rare images and video footage.
- The **Parks Canada** section provides, through videos and podcasts, practical information for those interested in visiting the actual Burgess Shale site during the summer season.
- In the **Resources** section, find a quick guide to other sources of information, including links to five lesson plans created as a resource for educators.

New animal fossil, ROM 58005. photo: Jean-Bernard Caron. Reconstruction of animal body: Nicola Barr

Heritage Governor and Board of Trustees member Elsie Lo (right) guides a visitor during a ROM tactile tour.

Breaking Down Barriers

BY CHERYL BLACKMAN

Many communities have limited exposure to cultural destinations—**ROMCAN** aims to bridge that gap at the Museum

A woman sits at a microphone in her electric wheelchair. Two hundred members of the ROM and the general public wait expectantly in their seats alongside 100 grade 7 students from D. A. Morrisson Middle School, who fill the ROM's Bronfman Hall with their frenetic energy. It is October 26, 2011. They have gathered for the ROM's monthly Context Lecture to hear the remarkable Judith Snow talk about her exhibition *Who's Drawing the Lines*. At 60, Snow has lived beyond the health challenges of her lifelong quadriplegia and transcended all limitations projected onto her about her ability to express herself through painting and writing. She is a world leader in inclusiveness issues for people labelled disabled, and her exhibition features more than 20 works that challenge viewers to confront their perceptions of disability. As Snow shares her journey as an artist and social innovator, the audience is transfixed. Her story makes the impossible suddenly feel possible.

One student, Chris, is so moved that he later sends the ROM a letter sharing the impact Snow's story had on him. For the first time, he wrote, he felt he could do anything. Powerful feedback considering that he and the other students in attendance come from a neighbourhood considered at risk. Many children from high-priority areas are too overwhelmed by daily life challenges to consider a brighter future—and Chris's letter shows why ROMCAN, the Museum's access initiative aimed at supporting disadvantaged communities throughout the province, is so important.

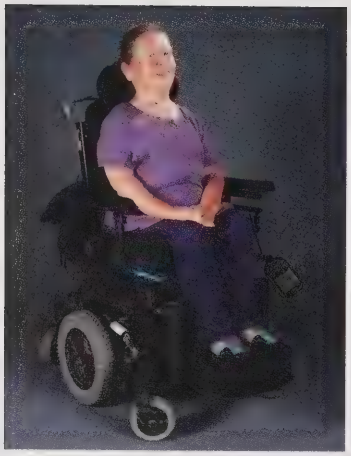
Long before the Royal Ontario Museum Community Access Network (ROMCAN) was started in 2008, the Museum had recognized the importance of making its treasures available to everyone. But the reality remained that many communities continued to have a limited history of exposure to the ROM and other cultural destinations. ROMCAN, one of the programs I oversee as assistant vice-president, Visitor Experience and Audience Insight, aims to bridge the gap and reach all Ontarians. Exhibiting Judith Snow's work in *Who's Drawing the Lines* and inviting at-risk students to attend Snow's lecture are just two small expressions of the ROM's commitment.

The day after Snow's lecture, the Museum announced that it was lowering admission prices by more than a third across the board. In 2011, the ROM conducted research that "demonstrated conclusively that many people—especially families—would attend the ROM more often if general admission prices were reduced," reported Gail Lord, co-president, Lord Cultural Resources, an international consulting practice that conducted the research. "This is a great centennial present for the ROM to give Canadians," she added. "It's a bold, unprecedented move for a Canadian museum."

"Increasing access is a priority for the ROM," confirmed Janet Carding, the ROM's director and CEO. In order to lower prices significantly for all visitors, the ROM discontinued its Wednesday two-hour period of free admission. The research had also shown that most people visiting during this period would pay to visit; the free admission was deflecting from resources supporting individuals and families who cannot afford to visit at any price. The finding was evidence that the ROM needed to work toward identifying and reducing other factors that might be preventing participation.

So the Museum chose to target its efforts directly at inclusion for those most in need by greatly expanding its ROMCAN program. The ROM has now partnered with 56 new community agencies to help put Museum admission into the right hands—a plan that delivers 75,000 free ROM tickets annually to those who could not otherwise visit. Contemplating the needs of full-time students, ROMCAN also began to offer free admission on Tuesdays to students attending a post-secondary institution, to engage and inspire the next generation of Museum supporters and visitors.

The payoffs of greater inclusivity can be significant. Richard Sandell, professor of Museum Studies at the University of Leicester, has suggested that when greater inclusivity is practised by museums it can help society achieve the goal of wider social inclusion and even combat contemporary social problems (*Museums as Agents of Social Inclusion*). Some museums, says

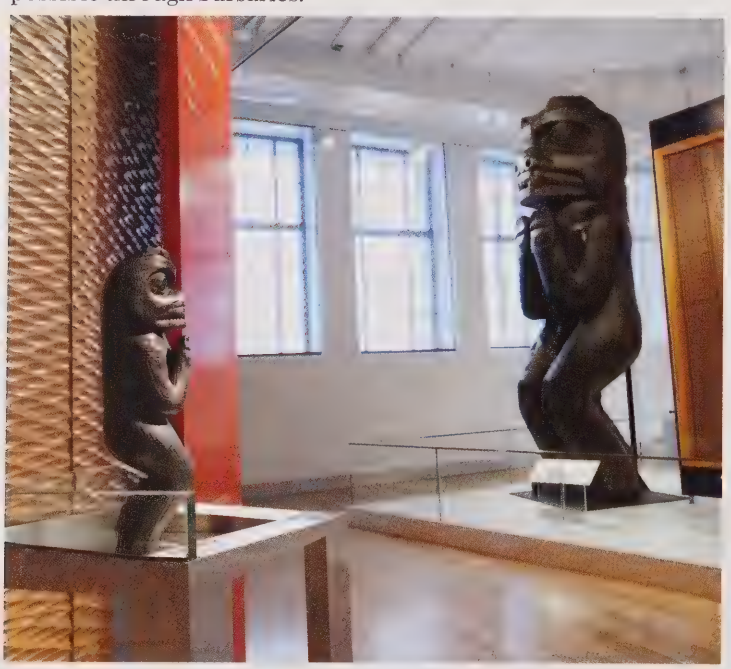


Left: Renowned advocate for Inclusion, Judith Snow is a visual artist and a social innovator.

Sandell, are beginning to redefine their role in society to become agents of social inclusion. The ROM now falls within that group—one of its primary goals has become figuring out how to engage all Ontarians who want to participate. The Museum is on a mission to build relationships with communities to reflect the interests of a diverse and continually changing population.

The best strategy for achieving this goal is opening up community dialogue. As Sandell points out, social exclusion is "the breakdown of the links between an individual and their family, friends, community, and state services and institutions." To counter such exclusion, the ROM is cultivating relationships within diverse communities to discuss their particular barriers and what the Museum can do to help overcome them. We're hoping that this will go a long way toward forging connections with communities that may not otherwise engage with the Museum whether because of lack of awareness, mistrust, or a feeling of being unrepresented.

So far, initiatives have included school programming, lectures, and art installations that reflect accessibility (exhibitions to date include *Out from Under: Disability, History and Things to Remember; House Calls with my Camera*; and most recently *Who's Drawing the Lines: The Journey of Judith Snow*) as well as tours and special exhibitions that offer Braille, American sign language (ASL), captioning, touchable objects, and large-print or tactile books. In 2011, the ROM installed a high-tech hearing-loop system that allows visitors with hearing loss to enjoy guided tours and interact seamlessly with front desk staff. In addition, many school visits for children from priority neighbourhoods have been made possible through bursaries.



When the Museum started ROMCAN in 2008, it had 17 initial partner agencies. The Cultural Access Pass program of the Institute for Canadian Citizenship (ICC) was one; founded in 2006 by the Right Honourable Adrienne Clarkson (former Lieutenant Governor) and John Ralston Saul, ICC aims to inspire full citizenship in new Canadians through exposure to Canada's cultural history, historic figures, and significant artworks in their first year as citizens. To that end, the ROM—and other institutions such as the Art Gallery of Ontario and the McMichael Canadian Art Collection—donate annual memberships to be given to new Canadians after their swearing-in ceremonies. The second of ROMCAN's initial partners, The Museum Arts Pass program (MAP), allows patrons of select branches of the Toronto Public Library (TPL) to sign out a pass, much as one would sign out a library book, which allows them to attend one of a variety of cultural venues, including the ROM. The Museum worked with TPL to identify branches closest to some of the city's highest priority communities to increase the likelihood of participation from those facing economic challenges. The other partners, 15 United Way agencies in the GTA, offered monthly allotments of general admission ROM tickets for distribution to families and individuals. Those agencies work to facilitate visits for under-served community members, including aboriginal youth, at-risk youth from marginalized communities, women leading single-parent households because of violence in the home, and seniors on a fixed income.

Since October 2011, through the ROM's new community and charitable partners, tickets are also distributed to families on fixed incomes, children with life-threatening medical conditions, abused women, newcomers to Canada, and Canadians with physical and mental disabilities. (To learn more about participating organizations see the Community Partner Profiles on page 29.)

The benefits of providing tangible improvements, such as Braille or hearing loops, that enable people with disabilities to visit or more fully participate in a visit are obvious—and much appreciated. We often hear back from visitors such as this one who said: "My sister was a wheelchair user and we were treated like gold every time we went there. The ROM is an AWESOME place!!!!!!!!!!!!" But when people hear about the larger scope of community access programming, by far the most frequent question is do these tickets really make a difference? The answer is yes, they do—we know they are popular. Since 2008, the ROM has consistently been one of the top venues visited in the Museum Arts Pass program. There is often a waiting list for ROM MAP passes, and library patrons have been known to queue at participating branches well in advance of the Saturday morning weekly distribution.

Without programming like ROMCAN, children from priority neighbourhoods often lack the resources and consequently the opportunities for enrichment that children from more affluent neighbourhoods enjoy. This can make a significant difference in their lives. Exposure to arts and culture contributes to children's intellectual development in many ways. A 2005 report by the Rand Corporation (a non-profit institution that helps improve policy and decision-making through research and analysis) found that involvement in the arts is associated with gains in math, reading, cognitive ability, critical thinking, and verbal skill. As the report noted, "experiencing art can connect people more deeply to

Left: The small sculpture at left is a touchable reproduction of the actual artifact at right. Mounted on a Braille plinth, such models are part of a tactile program at the ROM to enhance the experience of persons with disabilities.

Above: Newly sworn-in Canadian citizens receive the Cultural Access Pass, free one-year membership to a number of cultural organizations, including the ROM.

the world and open them to new ways of seeing." Programs such as ROMCAN provide that opportunity, helping to lay a foundation to forge social bonds and community cohesion. Says the ROM's Carding: "The great thing about a Museum visit is that it carries on delivering after you've left. The next time children who've visited go out for a walk, they'll see the world differently."

As someone who has witnessed the impact of community access programming first-hand, I can attest to the joy it can bring. In 2010, I was invited as a representative of the ROM to participate in a swearing-in ceremony at the St. Clair East citizenship office. As the court clerk introduced us, I can honestly say I was humbled to stand before a room filled with more than 80 women, men, and children, and in many cases entire families, who were less than a few hours away from becoming Canadians.

The emotions of the event were palpable and at times it took everything in me to hold back tears as I witnessed the pride in this crop of new Canadians. That pride was coupled with awe when they were told about the opportunity to apply for free memberships to cultural organizations. Colleagues from sister organizations have shared similar accounts of feeling overwhelmed by witnessing the joy as applications were distributed. The sense of wonder I continue to see as recipients of these memberships arrive for their first Museum visit reminds me of the power of learning about world cultures and the natural world.

New efforts to open up dialogue with ROMCAN members and the broader community are still under way. Our most recent pilot initiative is a youth club for new Canadians that will be much like our popular Saturday Morning Club, but with a focus on learning about Canada and practising English. Through this community work, the ROM is taking further steps toward its goal of belonging to everyone. ○

Toronto Star/GetStock

ROMCAN: PARTNERS IN COMMUNITY

The ROM is pleased to welcome its new ROMCAN community partners. They will help the ROM to reach a wider segment of Ontarians, offering the opportunity to experience the Museum's treasures.

Kids Up Front Foundation Toronto
is a charitable organization that provides access to arts, culture, sports, and recreation for children in Toronto who otherwise do not have these opportunities. Kids Up Front reaches children and families in need by distributing arts, culture, and sports tickets to 150 charitable partners. Since 2006, Kids Up Front has provided more than 160,000 children in our community with free access to events.

Literature for Life
unleashes intellectual potential within young, marginalized mothers who struggle to survive the challenges of living in or near poverty. Through one-of-a-kind reading circles, Literature for Life promotes the benefits of reading and literacy, helping young moms develop their intellectual potential.

Make-A-Wish® Canada's
mission is to grant the wishes of children with life-threatening medical conditions, to enrich the human experience with hope, strength, and joy. Make-A-Wish Canada is a part of the largest wish-granting organization in the world, which can be found in more than 36 countries on five continents.

The Hospital for Sick Children (SickKids)
is recognized as one of the world's foremost pediatric health-care institutions and is Canada's leading centre dedicated to advancing children's health through the integration of patient care, research, and education. Founded in 1875 and affiliated with the University of Toronto, SickKids is one of Canada's most research-intensive hospitals and it has generated discoveries that have helped children around the globe.

The Centre for Addiction and Mental Health (CAMH)
is Canada's largest mental health and addiction teaching hospital, as well as one of the world's leading research centres in the area of addiction and mental health. CAMH combines clinical care, research, education, policy development, and health promotion to help transform the lives of people affected by mental health and addiction issues.

The Youth Challenge Fund
is an umbrella organization of 21 agencies whose mission is to engage marginalized young people who have not accessed traditional youth programs. YCF has collaborated with youth leaders, the private and public sectors, community-based organizations, and individual donors to support a new approach to community building that puts young people in the driver's seat. The most effective solutions to problems confronting young people in our most under-served neighbourhoods—disengagement, violence, and barriers to accessing education, employment, and safe spaces—are youth-led solutions.

The United Way Toronto
is a charity working to advance the common good and create opportunities for a better life for everyone in the city. Working in partnership with others, United Way mobilizes people and resources to address the root causes of social problems and to change community conditions for the better. United Way supports agencies that provide services to strengthen individuals, families, and communities.

VIEWS
is a non-profit provincial support and advocacy organization that works with other stakeholders to advocate for and provide opportunities to assist children who are blind or have low vision in reaching their full potential. VIEWS educates policy makers, families, and the public about the abilities and needs of children who are blind or have low vision.

YWCA Toronto
is dedicated to improving the lives of women and girls. YWCA helps women and girls flee violence, secure housing, find jobs, establish their voices, enhance their skills, and develop confidence. It offers a range of housing options, employment and training programs, community support programs, girls' programs, and family programs in addition to advocating for women and girls in the system.

The YMCA of Greater Toronto
is a charity focused on community support and development. Its aim is to provide every individual in the community with opportunities for personal growth, community involvement, and leadership. By making connections, collaborating, and mirroring the region's diversity, the YMCA believes it can become the network that binds our many neighbourhoods into one city, one country, and one world.

TRACKING THE COYOTE

Headlines tell us these wild canids are in "our" territory more and more—a ROM mammalogist explains why

BY JUDITH EGER

They came across the snow-covered field one cold February morning just as I was finishing breakfast. I was excited when the first coyote caught my eye, and amazed to see two more following behind. Running with noses to the ground and tails down, they were obviously hunting, fanning out as they crossed our field into the property down the slope. I wondered what the shy, elusive coyote was doing hunting in broad daylight seemingly without a care near my property in Thornbury, Ontario.

People in this Beaver Valley community of southern Georgian Bay have been asking me questions about the local coyotes for some time now, and most of the questions have a common theme. Size. "Are you sure they're coyotes?" people ask. "They look too big to be coyotes."

According to ROM departmental associate Fiona Reid, author of *A Field Guide to Mammals of North America* (2006), coyotes run with their tails hanging down while wolves, which have shorter ears and larger feet, run with their tails up or straight out. It sounds simple. These animals definitely run with their tails down, which makes them coyotes. But the history of wolves and coyotes in Ontario is far from simple. It's a complex story of species interbreeding that biologists are still trying to unravel.

When European settlers first came to North America in the late 1500s to early 1600s, they found the coyote (*Canis latrans*) on the plains, grasslands, and deserts of the central and western parts of the continent. At that time the species appeared to prefer open and semi-forested habitat. Early in the 20th century, observers here in Ontario noticed that the coyote began a dramatic expansion of their territory that continues today.

In the early 1900s, there were no coyotes in central Ontario, let alone in southern Ontario or the Greater Toronto Area as there are today. According to an article published in 1937 in *Rod and Gun* by E. C. Cross of the ROM's mammal section, coyotes or brush wolves as they were then called were at that time restricted to northwestern Ontario. Cross used bounty and fur-trapping records to determine the changing distribution of coyotes in Ontario. By 1956 coyotes were found as far north as the shores of Hudson and James bays and south to the shores of Lakes Ontario and Erie. It had taken only 50 years to colonize the entire province of Ontario, and then another 25 years to reach the Gaspé Peninsula, northeastern New Brunswick, and finally Cape Breton Island in northeastern Nova Scotia, where in 2009 a young woman visiting from Toronto was fatally attacked by coyotes in Cape Breton Highlands National Park.

The reasons for the coyote's rapid expansion are complex and not fully understood, but certainly humans have contributed greatly to it. We have cleared forests and turned them into agricultural fields, and we have provided reliable food sources in the form of domestic livestock, garbage, and occasionally our pets. And, through habitat destruction and persecution, we have removed the one species that would naturally have kept the coyote in check, the grey wolf (*Canis lupus*).

Originally, the coyote's range was limited by the presence of this larger and more powerful canid in the north and east of North America. To the south of grey wolf territory, another species, the red wolf (*Canis rufus*), once lived. Very little is known about the natural history of this wolf because its range and numbers were already severely reduced when scientific investigations began in the mid 1800s. But its decline likely allowed the

Photo by Chris McConnell, Gone Wild Photography

Coyote (*Canis latrans*) in rural Ontario.

Distributions of *Canis* species in North America.

coyote to expand eastward in the southern United States. The later decline of the grey wolf and extirpation of the red wolf made way for the very adaptable coyote to expand its range into forests, agricultural areas, urban ravines, and the backyards of eastern North America.

But to fully understand canid history, and therefore what is happening today, we need to look back even further in time, to the fossil record. When Europeans arrived in North America, the three large species of wild canids—the grey wolf, the red wolf, and the coyote—were already here. The largest and most widely distributed was the grey wolf, a species whose large size (averaging 36 kg), intelligence, and social nature made it well adapted as the major predator of northern ungulates, or hoofed mammals, such as moose, deer, elk, caribou, and sheep. Information from the fossil record indicates that the grey wolf, a species that evolved in the Old World, made its way into North America via the Bering Land Bridge, becoming well established in Alaska some 300,000 years ago. It did not appear south of the area covered by the Laurentide Ice Sheet (which reached its most recent and maximum extent about 18,000 years ago) until 10,000 to 12,000 years ago, when it is found in southern Alberta, southern Saskatchewan, and the bordering US states. Gradually, the grey wolf spread east across northern Canada following the retreating ice sheet, the last remnants of which disappeared from Labrador 5,000 years ago.

With such a widespread distribution comes a considerable amount of geographic variation, which caused the evolution of many different subspecies of the grey wolf. Originally thought to be among them was *Canis lupus lycaon*, the wolf that originally occupied the region from eastern Minnesota to the Atlantic and from central Ontario to parts of the northeastern United States. In recent years, some scientists have suggested that this subspecies is actually a distinct species, the eastern wolf (*Canis lycaon*), closely related to or even the same species as the red wolf (*Canis rufus*). Certainly the two look quite similar. In the past 300 years, due to habitat destruction and persecution, these eastern wolves have suffered a drastic loss in numbers and distribution and today are thought to exist only in central Ontario and the adjoining area of Quebec.

Unlike the grey wolf, the coyote and the red wolf originated in North America, likely shared a common evolutionary history, and were already well established by the time the grey wolf became one of the most widely distributed land mammals in North America (dating back 10,000 years). Common and widespread throughout the last 300,000 years, the coyote's range extended from Alaska to Pennsylvania and from Florida to Mexico. Looking through fossil records, it is clear that early coyotes were larger than today's but over time there was a gradual transition in size along with a reduction in the amount of territory they inhabited, down to that found by Europeans when they arrived in western North America in the 1500s (see top map). Today's coyote in Western North America, which eats a variety of foods, including small mammals, birds, berries, insects, and carrion, is the smallest of the canid species, weighing 7 to 14 kg.

The red wolf has a scant fossil history dating back to 10,000 years ago in Florida, Arkansas, Texas, and Mexico but is also known from a number of archaeological sites in the eastern United States. Based on these sites, we know that the red wolf was found in pine and broadleaf forests throughout the southeastern United States from eastern Texas and Oklahoma, to southern Indiana and New Jersey.

This wolf is larger (20 to 40 kg) and more robust than the coyote and somewhat smaller and more delicately built than the grey wolf. It lives on small to medium-sized mammals such as rabbits, hares, and birds, but can also take deer. A behavioural character that separates it from the coyote is its habit of running with its tail out or up, similar to the grey wolf. Presently the red wolf is endangered. It had vanished from the wild because of habitat loss, hunting, and trapping but captive populations have been maintained since the 1970s and some have been released into parts of the southeastern United States.

So, how does all this relate to the large coyotes that ran across my field near southern Georgian Bay? Why are these coyotes so large? Perhaps the coyote is a very adaptable species, and in its new environment, without competition from the larger grey wolf, it has evolved a larger body size, which would be advantageous for hunting larger prey.

But there is a less speculative way to answer the question—genetics. There has been a lengthy debate over the origins of the two recognized wolf species inhabiting eastern North America—the red wolf in the eastern United States (re-introduced through captive breeding programs) and the eastern wolf in Ontario's Algonquin Park and surrounding areas. A recent genetic study, led by Robert Wayne of the University of California, Los Angeles, concluded that eastern wolves in Algonquin Park are mostly grey wolf and a mixture of previously hybridized wolf/coyote and not a separate species.

Canid facts at a glance: Comparing the North American species

Comparative summary of distribution and characteristics of grey wolf, coyote, and eastern/red wolf
Based on *A Field Guide to Mammals of North America*

Common Name & Species	Size & Distinguishing Features	Range Historic	Range Present	Habitat	Habits
COYOTE *Canis latrans*	Shoulder height 50–60 cm; weight 7–22 kg Long legs; large ears; long narrow muzzle; body colour variable, grey/tan in north, tawny in south	Western Canada, western United States, to southern Mexico	Most of North America from Alaska south to western Panama; western to eastern North America south of the treeline	Grasslands, deserts, woodlands, mountains, agricultural and urban areas	Highly adaptable; most active at dawn or dusk in east, nocturnal or diurnal in west; eats a variety of food
GREY WOLF *Canis lupus*	Shoulder height 70–80 cm; weight 25–70 kg Large and long-legged; big feet and small ears; muzzle long, not greatly tapered; greyish on back	Northern and western North America to Mexico	Alaska, northern and northeastern Canada; reintroduced to western Wyoming and Idaho (from Canadian populations)	Boreal forest and tundra; restricted to areas of extensive wilderness	Mainly crepuscular but may be active by day; eats mostly large mammals; very social species
EASTERN WOLF / RED WOLF *Canis lycaon / Canis rufus*	Shoulder height 70 cm; weight Red Wolf: 20–40 kg; Eastern Wolf: 25–30 kg Long-legged, rangy; ears large; colour variable, blackish or reddish brown; legs reddish; back grey-brown	Central Ontario, southern Quebec and Great Lakes area, south through eastern United States to eastern Texas and Florida	Algonquin Park and surrounding area, southwestern Quebec reintroduced into Tennessee, Louisiana, North Carolina, Florida, and New Jersey from captive populations	Heavily forested areas of eastern temperate forest	Similar to grey wolf

Coyote, John Pitcher/iStockphoto. Grey wolf, Corbis Photos Photograph. Eastern Canadian wolf, Bob Gurr/All Canada Photos/SuperStock

If you go out in the woods today . . .

WHAT TO DO WHEN COYOTES ARE NEAR

The changes in coyote distribution over the past 100 years tell me that these animals are with us to stay. As a resident of the city, I celebrate their presence in the ravines and in neighbourhoods adjacent to coyote habitat. In the country, they have become part of the established Ontario fauna. But wherever they interact with humans, they can cause problems. Let's accept them, observe them, and enjoy their presence, but be sensible about how we manage ourselves, our property, our pets, and our livestock. A few small precautions can help us avoid close encounters.

- **Eliminate sources of food** from your property, including pet food, food for wild animals, even fallen fruit. Coyotes are omnivorous and, like any animals, will be attracted to an easy source of food. They are curious and do not fear humans.
- **Keep pets indoors**, particularly at night.
- **Clean up after your dog**. Coyotes are attracted to dog feces.
- Fence your property with a fence **at least 2 metres in height**.
- **Neuter or spay your dog**. Coyotes are attracted to and will mate with domestic dogs not spayed or neutered.
- **Do you keep livestock?** Use llamas or donkeys, which are aggressive toward predators, to guard them.
- **When you encounter a coyote, remain calm** and face the animal. Do not run—the coyote will instinctively give chase. Make noise and make yourself look larger by waving your arms.
- When walking your pet in coyote country, **keep it leashed**.

For more information, see the Ontario Ministry of Natural Resources website at www.mnr.gov.on.ca.

Wayne's analysis, which assessed genetic diversity in dogs, wolves, and coyotes, found that two eastern wolf samples from Algonquin had 60 percent grey wolf ancestry and 40 percent coyote. They tested coyotes from New York, New Hampshire, Vermont, Connecticut, and Quebec and found them to be on average 84 percent coyote, 8 percent grey wolf, and 8 percent dog.

In a separate study, Roland Kays of the Buffalo Natural History Museum found evidence that coyotes near the Great Lakes in the United States migrated east and bred with grey wolves. These hybrid animals, still considered coyote, have become the top predator in the eastern US, filling the void left by the disappearing eastern wolf, which was hunted out of existence in the United States.

Some scientists, however, are skeptical of the notion that eastern wolves are hybrids of grey wolves and coyotes. In this camp is David Mech, a grey wolf expert who has studied these animals for more than 50 years. Typically, grey wolves do not mate with coyotes, but usually kill them, he says. In the west, where coyotes and grey wolves live in close proximity, there is no evidence of such hybridizing behaviour. Mech has observed that when the Minnesota population he studies dropped below one wolf per 39 square kilometres, coyotes from the immediately surrounding area invaded. John and Mary Theberge, studying the wolves in Algonquin Park from 1987 to 1998, found similar evidence of coyote encroachment when wolf populations within the park declined to a similar level.

Canadian researchers led by Paul Wilson from Trent University, studying the genetics of Ontario wolves, have agreed that indeed there is hybridizing happening within Ontario, but between the eastern wolf (*Canis lycaon*), including the ones in Algonquin Park and the Tweed-to-Magnetawan areas, and the coyote in central Ontario. According to their evidence, the eastern wolf is also moving west and mating with grey wolves in the area of Ontario north of the upper Great Lakes.

For me, the interpretation that makes most intuitive sense combines several lines of evidence. Since the studies summarized here examined different animals from various areas using different methods, it's not unexpected to see different interpretations and conclusions for each study. What is certain is that the eastern wolf was recognized as different from coyote and formally described as early as 1755, almost 200 years before the coyote invaded from the west. So the animal present in central Ontario and around the Great Lakes at that time was free of modern hybridizing coyote genes.

But, it was not necessarily free of older coyote genes. A group of scientists led by Brad White of Trent University has just reported on 400- to 500-year-old *Canis* samples excavated from a pre-contact Iroquois village in London, Ontario. Two of the samples show genetic sequences matching those of present-day coyote, not grey wolf. Comparing their tooth morphology, however, shows eastern wolf rather than coyote origin. This discovery suggests that the New World–evolved eastern wolf and not the grey wolf occupied this region prior to the arrival of Europeans, although eastern–grey wolf hybrids cannot be ruled out. This further supports the theory of a shared ancestry between eastern wolves and western coyotes. Hybridizing could have happened over the last 18,000 years during the last glaciation. White's group also suggests that the grey wolf did not inhabit the deciduous forests of eastern North America but was associated with the boreal forest and the Precambrian shield. The grey wolf and the eastern wolf would likely have hybridized more recently, once they came into contact after the retreat of the ice, in and around those areas where deciduous and boreal forest mix.

Whatever is happening, the wild canids of Ontario are something of an alphabet soup of coyotes, wolves, and dogs. While these species can interbreed, such behaviour is not typical; historically they have maintained a certain level of breeding integrity. Changes to Ontario's habitat have likely enabled some of the recent hybridization that has occurred. The changed environment may now favour the smaller deer-eating wolf *Canis lycaon* in areas that are still forested and has certainly allowed coyotes to expand into rural Ontario. This changing face of the canids in Ontario is not necessarily a negative development. The animals are adapting to changed environments.

And so, this brings us back to the question of why the coyotes in Thornbury are so large and what they were doing hunting in daylight. It seems that coyotes have become accustomed to living in populated areas, and a rural field on an overcast February morning did not pose a threat to them. I think these animals are primarily coyote with small amounts of grey wolf and possibly dog DNA. They look like coyotes, they behave like coyotes, and for the most part they are coyotes. As a naturalist, I like to categorize, put species into boxes, to be able to distinguish a coyote from a grey wolf. But as a scientist, I realize that what I'm seeing is evolution in progress—evolution accelerated by humankind's hand. ○

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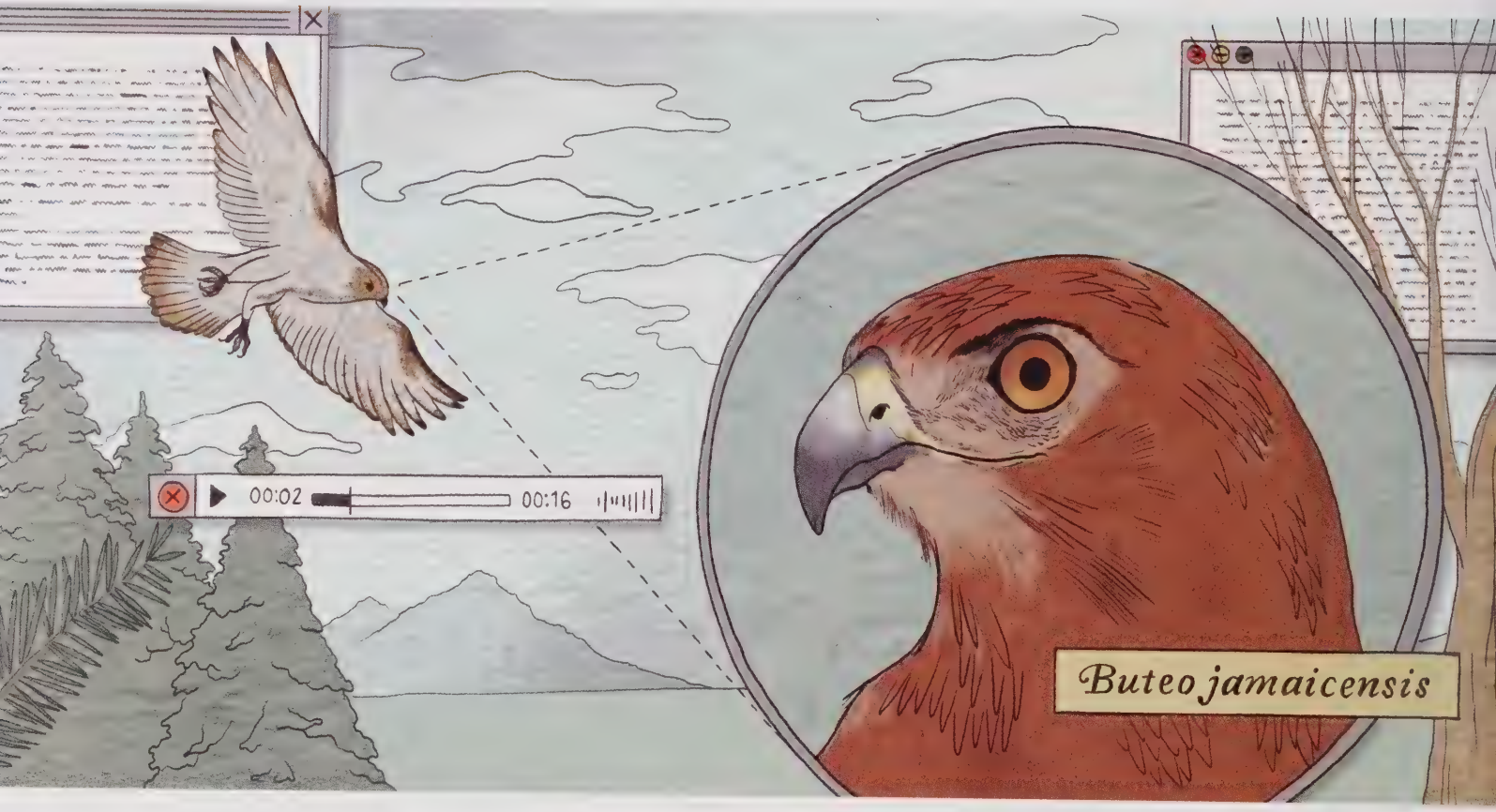
The Brave New World of Birding

Is technology helping or hindering our enjoyment of the great outdoors?

BY MARK PECK



Illustration, Marco Cibola

In the 1932 classic *Brave New World*, Aldous Huxley wrote about a saturation of information technology and the imminent danger it posed for future societies. When I joined the ROM in 1983, computers in the ornithology section consisted of a lone departmental word processor only slightly smaller than a smart car. Today, our offices and labs are filled with a vast array of computers, monitors, polymerase chain reaction (PCR) machines, and DNA sequencers.

On my return home each evening, I share my GO train with the rest of the suburban beehive, busily working on our laptops, smart phones, ebook readers, and the variety of other tech toys and devices that seem to have multiplied exponentially in the last 30 years. Even family car rides take on a new level of excitement—personal video screens and video games illuminate the darkness of the back seat while parents busy themselves in the front texting, connecting to the bluetooth, or trying to reroute the global positioning system (GPS). I cannot help but think Huxley may have been on to something. Few people seem to while away the time just staring out the window anymore, watching the world go by. Does anyone even notice the red-tailed hawks hunting along the roadside or the snowy owl quietly sitting atop a telephone pole? Are adults and children even aware of the outdoors, and do they still appreciate the natural world around them?

When I am not at work in the Museum's ornithology collections, I can often be found birding with friends, enjoying the outdoors while chasing down species I haven't seen before or looking for bird nests. It's an interest I've had since my first fieldtrip with my father at age 11. On a recent Toronto Christmas Bird Count, I was part of a group of 13 birders scouring the southwestern corner of Toronto and documenting all the birds we could find. In our group were three 13-year-olds and their parents. The rest of us were substantially older! I was impressed by the knowledge the kids possessed and I began to wonder from a birding perspective if all the new information technology was helpful or merely a hindrance.

While it turned out that all three teens had developed an interest in birds through their own observations or with encouragement from their parents, recent technology had certainly contributed positively to their interest. For the older folks in the group, information technology was just as important as the powerful new binoculars, spotting scopes, and cameras that are now available.

It's not surprising. Valuable and even real-time knowledge can

be obtained and shared on information and educational sites on the Internet. Government organizations such as the ROM, the Ontario Ministry of Natural Resources, and Environment Canada, and non-government organizations such as Ontario Field Ornithologists and Bird Studies Canada (BSC) regularly collaborate on websites and programs. At right are a few sites that I recommend for birders.

While the information age has certainly changed the way we learn and communicate, it should not be used as an excuse for keeping us or our children indoors. Our health and the health of the planet are inseparably linked. The information technology world may be providing us with different entertainment options, but it is also giving us greater freedom to explore the planet. Children, especially those from urban environments, need to experience the outdoor world, get their toes wet in a cattail marsh, explore a woodlot in the spring, and fall asleep outside looking at a sky filled with stars. ○

MARK PECK is a technician in the Ornithology section of the ROM's Department of Natural History.

BIRDERS' ONLINE GUIDE TO THE WORLD OF BIRDS

DENDROICA
natureinstruct.org/dendroica/

This is an identification site developed by Environment Canada and the United States Government Survey for amateur and professional birders, aimed at improving their skills for their own enjoyment and to enable them to participate in surveys and monitoring programs.

ONTBIRDS
ofo.ca/information/ontbirdssetup.php

This is an electronic listserve that notifies birders of interesting birds found around the province. Birders who find interesting species send an e-mail to the website. The e-mail is then distributed to all other subscribers and the chase—or twitch, if it is a rare species—is on!

EBIRD CANADA
ebird.org/content/canada/about

Established in 2002 by the Cornell Lab of Ornithology and the National Audubon Society, eBird is an online checklist program that is changing the way birders track their daily sightings, lists, and even other birders. Simply enter time, date, and locality information, and then fill out the checklist with the bird species and numbers you observed—eBird does the rest. Data is collected in a statistically rigorous format, reviewed by regional experts, compiled, archived, and then made accessible to individuals, local conservation groups, and a growing global biodiversity information community. What starts out as a personal checklist rapidly becomes part of a tremendous resource for establishing bird abundance and distribution across Ontario and the rest of the world. Just think: birds observed on the annual family camping trip can now contribute to science and conservation today and in the future.

BIRD STUDIES CANADA'S PROJECT NEST WATCH
birdscanada.org/volunteer/pnw/
THE ONTARIO NEST RECORDS SCHEME
birdsontario.org/onrs/onrsmain.html

Coordinated through the ROM, Bird Studies Canada (BSC) and Canadian Wildlife Service (CWS) are online data entry and reporting sites for both amateurs and professionals. As with eBird, volunteers provide detailed information on bird nests they find around the province. The information is archived, entered into a database, and then made accessible to researchers and contributors alike.

Beyond the Internet, the development of smart phones and tablets allows for even greater flexibility through the myriad of applications now available. Most of the information normally accessed at home is now available on very portable devices. On my current phone for example, I have access to Ontbirds, eBird, two electronic bird field guides, bird songs, maps, weather reports, texting, e-mail, and the Internet. I even have Facebook in case I want to see what the rest of my friends and family are up to on a busy birding day.

Maya Mania

Bring home a taste of Mesoamerica

BY DIANA DIFRANCESCO

1

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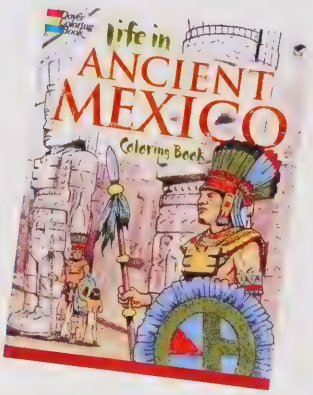
Why we love them! Each one is handmade from recycled glass.

2



2. LIFE IN ANCIENT MEXICO COLOURING BOOK
Colour your way through the history of Pre-Columbian civilizations in ancient Mexico with this fun, educational book. **$5.25. ROM Member price $4.72.**
Why we love it! The detailed captions on each page are filled with fascinating information.

3

3. HANDMADE VASE
The elaborate, free-hand designs etched into this beautiful handcrafted piece of Fair Trade pottery are inspired by ancient Maya themes and motifs. **$124.99. ROM Member price $112.49.**
Why we love it! Each piece comes with a photo and biography of the artisan who created it.

5

5. HAND-ETCHED PRINT
Bring home a view of Maya architecture with this intricate print of the Palacio de Palenque. **$79.99. ROM Member price $71.99.**
Why we love it! Each is a signed, numbered edition by Raquel Chávez Lanz. Pick one up before they're gone!

All items listed on this page are available at the **ROM Museum Store**.

Store Hours: 10 am to 6:30 pm, except Friday 10 am to 9 pm.
Kids Store: Monday to Sunday, 10 am to 5 pm, except Friday 10 am to 8 pm. Check out our online boutique at **store.rom.on.ca**.

4

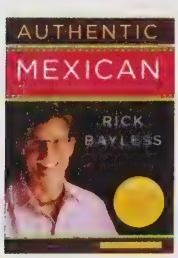
4. EXHIBITION SOUVENIR GUIDE
The official souvenir guidebook to *Maya: Secrets of their Ancient World* traces the history of the Classic Maya civilization—its kings and cosmos, architecture, astronomy, complex writing system, and the Long Count calendar and includes added bonus of coupons worth more than $10 in ROM stores and restaurants. **$5 (tax included). ROM Member price $4.50.**
Why we love it! It's beautiful, authoritative, and amazing value.

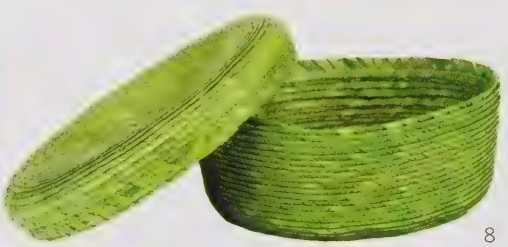
6

6. THE HONEY JAR
Learn how the ancient Maya saw the world with this vibrantly illustrated collection of myths and stories passed down through generations. **$18.95. ROM Member price $17.05.**
Why we love it! Author Rigoberta Menchú Tum, a Maya activist, won the 1992 Nobel Peace Prize for her work advocating for indigenous peoples' rights in Guatemala.

7

7. ARTIFACT BOARD GAME
Travel the globe on a quest to successfully recover lost and stolen artifacts in this exciting strategy game. **$34.99. ROM Member price $31.49.**
Why we love it! Since players learn about cultures and artifacts from around the world, everyone's a winner.





8

8. COOKBOOK AND TORTILLA BASKET
Pair this bright, woven tortilla warmer with a classic cookbook for a foolproof foodie gift. **Cookbook $36.50. ROM Member price $32.85. Tortilla basket $19.99. ROM Member price $17.99.**
Why we love them! Spice up taco night with authentic Mexican flavours.

During the Classic period, members of the Maya royal court resided in richly decorated palaces containing offices, banquet halls, and schools as well as living areas. At the ROM Museum Store you can now find Maya-inspired elements to adorn the rooms of your own palace. Whether you're looking for cookware for the kitchen, toys and books for the playroom, or a beautiful piece of handmade art, find inspiration in the ROM's breathtaking exhibition on the ancient Maya civilization.

Keep your eyes peeled this spring for an array of new items arriving at the Museum Store, and be sure to visit *Maya: Secrets of their Ancient World*, on at the ROM until April 9, 2012. o

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DIANA DIFRANCESCO plans special events for the ROM Governors.

Behind Every Great Museum

Left: Marie Dorey and Barb Magee, two of the 518 members of the ROM's Department of Museum Volunteers.

Left: One of Patricia Harris's first jobs as a ROM volunteer was collecting haute couture clothing for an exhibition. She also served as one of the models for the corresponding book (*Haute Couture: Notes on Designers and Their Clothes in the Collection of the Royal Ontario Museum*, by Katharine B. Brett, University of Toronto Press, 1969).

A group of ROM visitors huddles around a mummy case as Gary Cassidy explains mummification. The ancient Egyptians discarded the brain, considering it a useless organ, Cassidy points out, then pauses, a sparkle in his eye, before delivering his punch line. "You may know people today you could still say that about!" A life insurance manager by day, Cassidy admits to being "something of a frustrated ham actor" who gets a kick out of the theatrical aspect of leading tour groups through the Museum, where he has spent many a Friday evening as a docent over the past 25 years.

Cassidy is just one of the ROM's 518-member Department of Museum Volunteers (DMV), which supports ROM staff and enhances the visitors' experience through jobs ranging from greeting and giving directions to offering visitors a chance to interact with objects in galleries, running Friends-groups lectures and events, and taking artifacts into the community through Outreach programs. As National Volunteer Week (April 15–21) approaches, the Museum pays tribute to its committed group of volunteers.

Founded in 1957, the DMV runs more than 30 committees. The free tours offered weekly in English and French are delivered by volunteers, a job for which they train for 16 weeks. "You have to love what you're doing," says Cassidy, who also plans marketing and promotions for ROM Travel. "For me it's a lifelong learning thing. As I like to say, after 25 years, I know a little about a lot."

Even new volunteers such as Roya Adeli, a University of Toronto student, take the commitment seriously. She manages to squeeze in time to volunteer in the DMV office each week despite pursuing a major in biological anthropology and minors in history and classics.

Many DMV programs also raise needed funds. One of the most popular is ROM Travel—guided trips abroad and local ROMbus tours. Over the years Pat Harris, a DMV past president who has volunteered at the ROM for 53 years, has masterminded many fundraising events, a favourite being an auction of denim jackets customized by local fashion designers.

The DMV raised more than $1.7 million for Renaissance ROM and over the last 10 years has donated $545,000 to the Research & Acquisitions Fund (not counting the significant amount contributed by associate committees). "These donations are critical to fostering research excellence at the ROM," says Mark Engstrom, deputy director, Collections and Research. "They provide seed money for innovative research projects as well as supporting existing programs."

For volunteers, the experience can be an adventure. "The opportunities for doing interesting things has been non-stop," says Harris. "I've had to change and grow because of the challenges and experiences I've faced." One of her fondest memories is of collecting examples of haute couture clothing from their original owners for an exhibition and book in the 1960s. When the ROM was closed for renovations during the late 1970s, Harris gave more than 100 talks around the province as part of the ROM's speakers' bureau. She worked with the CBC to develop scripts for docent tours. And she has served on the Museum's Board of Trustees.

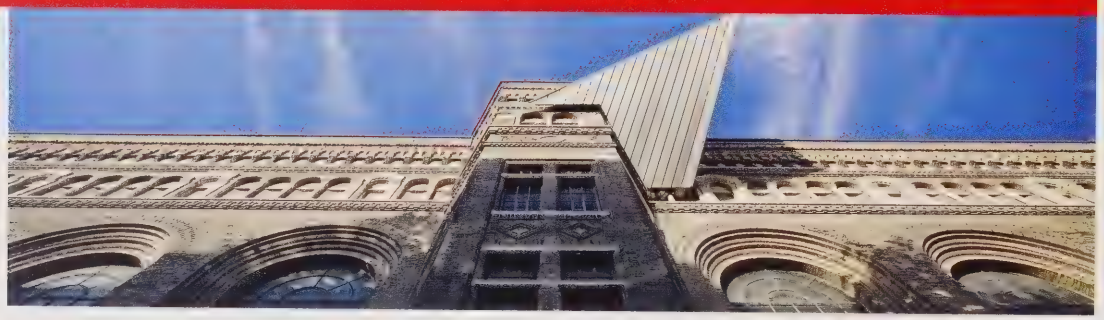
One of the DMV's secrets to success lies in that very adaptability, always retooling its programs to suit current situations. It's a culture that ensures volunteers will continue to be an integral part of the Museum for its next 100 years. ○

FOR OUR

members

The latest offers and information

NEWS / EVENTS / SPECIAL OFFERS / **TRAVEL**



ROM MEMBERS' MESSAGE

We Were Delighted to Hear from You

And are offering a new level of Membership

Over the past year, since I joined the ROM, it's been amazing to see how much the ROM benefits from our Members and how invested you are in the Museum. As many of you know, the ROM has been developing a strategic plan to guide us through the next five years and beyond. We called on Members for your insights and opinions in a number of ways and were thrilled to see how engaged and invested you were in the process. We thank all of you for your interest and contributions, which form a vital part of our planning as we move forward.

Already we have responded to some of your ideas. During our focus groups, for example, senior Members asked for more flexibility than what is provided in the Family/Dual membership. As a result, we are now offering a new membership level, Senior Family. This level is perfect for grandparents who come to the Museum with their children and their children's children.

Another common request was for more information on new ROM happenings. A great addition to the ROM experience, and the best way to stay up to date, is to follow us via our new social media channels. Check us out on Twitter (@ROMtoronto) for daily tidbits and fascinating facts; connect with us on Facebook (**facebook.com/royalontariomuseum**) for the latest news and to share ideas with the larger ROM community; or read our blog (**blog.rom.on.ca/**) for insider information, behind-the-scenes sneak peeks, and to learn about our curators' latest research projects around the world.

During the consultation process many Members also commented on how proud you are to be a part of the Museum community, a validating message for us as the ROM takes steps to becoming more accessible to more people every day through our decreased general admission pricing. It is heartening to see the emotional attachment that Members have to the Museum.

Thank you again for your insights and your enthusiastic support of the work we do here and the programs we provide. Although the planning process has concluded, I am always interested in your feedback and thoughts on your experience of ROM membership. So please feel free to contact me if you have comments that will help us continue to create added value for your ROM Membership.

Martha Henderson

MARTHA HENDERSON
HEAD OF MEMBERSHIP AND SALES

MEMBERS BELONG AT THE ROM

FREE FOR MEMBERS

ROM MEMBERS RECEIVE FREE UNLIMITED ADMISSION TO *MAYA: SECRETS OF THEIR ANCIENT WORLD*
See page 41 for details.

MEMBER PREVIEW

FRIDAY, JUNE 22, 2012
ULTIMATE DINOSAURS: GIANTS FROM GONDWANA
COMING SUMMER 2012
See page 41 for details.

MEMBER INFORMATION

MUSEUM MEMBERSHIP RATES
Individual: 1 year $97; 2 years $172
Family/Dual: 1 year $149; 2 years $269
NEW! Senior Family: $145
Non-Resident: 1 year $102; 2 years $183
Student: $54
Curators' Circle: $189
Museum Circle: $323
Director's Circle: $626
Young Patrons' Circle: $600+
Royal Patrons' Circle: $1,500+
Explorers' Club: $15 (in addition to ROM Membership)

TELEPHONE NUMBERS
Switchboard: 416.586.8000
RPC and YPC: 416.586.5842
Bell Relay Service: 711
School Groups: 416.586.5801
Museum Volunteers: 416.586.5513
ROM Museum Store: 416.586.5766
c5 Restaurant/Lounge Members Reservation Line: 416.586.8095
Donations: 416.586.5660

Membership Services:
416.586.5700
membership@rom.on.ca
rom.on.ca/members

Attention Members: Your privacy is important to us. The Royal Ontario Museum (ROM) and the ROM Governors (the ROM's charitable foundation) share a special relationship and you may receive additional information from each.

If you do not wish to receive it, contact membership@rom.on.ca or call 416.586.5700.

Occasionally, we make our list of supporters available to other carefully screened cultural organizations and selected groups that may be of interest to you. Please understand that by allowing us to exchange your name, you are helping us support the ROM's education and research mandates. If you prefer not to have your name exchanged, please contact us at membership@rom.on.ca or at 416.586.5700.

The ROM Membership Department operates a telemarketing office. Should you prefer not to be contacted by telephone, please contact us at the e-mail address or phone number listed above and we will have your number removed from our list.

Ball-game ring incised with a representation of K'uk'ulkan the Feathered Serpent, limestone, Early Post-Classic period (900–1250 CE), Chichén Itzá, Yucatán, Mexico; Museo de Sitio de Chichén Itzá, Mexico, 10-290175. Photo by Michel Zabé

NEWS

Maya: Secrets of their Ancient World

TICKETING FOR ROM MEMBERS

ROM Members receive unlimited free admission to the show and are not required to book advance tickets. They may reserve advance tickets or purchase tickets for guests by going to **rom.on.ca/maya** or **rom.on.ca/members**.

NEW

Senior Family Membership

Great value and flexible access for primary cardholders aged 65+. Entry includes the cardholder plus 1 adult and 4 children 17 years of age and under. For more information or to join, call 416.586.5700 or visit **rom.on.ca/members**.

Insider Walking Tours for ROM Members

Instruments and Architecture: An Insider Walk

March 25 and April 29, 2012

Registration is required: **rom.on.ca/whatson** or 416.586.8097.

Coming Summer 2012

MEMBER PREVIEW

Ultimate Dinosaurs: Giants from Gondwana

FORGET ABOUT THE DINOSAURS YOU KNOW . . . THIS IS A WHOLE NEW BREED OF BEAST.

Friday, June 22, 2012, 10 am–8:30 pm

Join us for a special preview of *Ultimate Dinosaurs: Giants from Gondwana* before it opens to the public. Meet David Evans, exhibition curator and dinosaur expert, for a brief welcome at 11 am, 2 pm, and 5 pm just inside the exhibition entrance. Garfield Weston Exhibition Hall, Level B2. For more information, visit **rom.on.ca/whatson** or call 416.586.5700.

ROM Friends

Friends of Textiles & Costume (FTC) Events

Decorative Textiles Lecture Series continues

Decorative Textiles Part 3

One Stitch at a Time: Embroidered Samplers and Canadian Embroidery in the ROM's Collection

Friday, April 13, 2012, 5 to 7 pm

Presenter: Anne Adams

ROM classrooms Barr Family Lab 3 and Kruger Family Lab 4, Weston Family Wing, Level 1

Decorative Textiles Part 4

Printed Textiles: An Old Technology, the Challenge from India, and the European Response

Friday, May 4, 2012, 5 to 7 pm

Presenter: Hanna Martinsen

ROM classrooms Barr Family Lab 3 and Kruger Family Lab 4, Weston Family Wing, Level 1

Registration: Free to FTC Members. All others $20 per session.

To register, visit **rom.on.ca/whatson** and select the session by date from the What's On calendar or call 416.586.5797.

Bishop White Committee Event

Chinamania: An Obsession for Chinese Porcelain

Saturday, April 14, 2012, 10:15 am to 3 pm

A light lunch and tours of the ceramics in the ROM's Chinese galleries are included.

Cost: ROM Members $65. General Public $70. To register, call 416.586.5797 or visit **rom.on.ca/programs**.

Proceeds of Bishop White Committee programs benefit the ROM's East Asian Section.

Friends of South Asia (FSA) Events

Friends of South Asia Lecture: The Singh Twins

Saturday, May 19, 2012, 2–3:30 pm

The public is invited to view a new painting on the Sikh Diaspora in Canada by contemporary artists The Singh Twins and hear them discuss how it was produced.

Location: Signy and Cléophée Eaton Theatre, Level B1

Free with Museum Admission, Free for ROM Members. No registration required.

Detail of *Sikhs in Canada*, 2010, by The Singh Twins.

Friends of South Asia Reception: The Singh Twins

Saturday, May 19, 2012, 3:30–4:30 pm

Meet the internationally renowned contemporary artists Amrit and Rabindra KD Kaur Singh, who have painted a new work for the ROM.

Free and exclusive to FSA Members and their guests (one guest per Member due to limited space). Registration is required. Visit **rom.on.ca/whatson** or call 416.586.5700.

What are ROM Friends?

Friends are a variety of affiliate groups within ROM Museum membership available only to ROM Members. Each group offers extras beyond ROM membership. Cost: $57 per group per year. For details: **rom.on.ca/friends** or 416.586.5700.

Cup depicting a noble gazing into a mirror, ceramic, Late Classic period (600–900 CE), Greater Yucatan Peninsula; photo: Dumbarton Oaks, Washington, DC, U.S.A. Maya preview: Ryan Walker Photography. Detail of *Sikhs in Canada*: ROM 2010.53.1.

this acquisition was made possible with the generous support of the Louise Hawley Stone Charitable Trust Fund.

NEWS

ROM Explorers' Club Event

Dinosaurs that Ruled!
Saturday, May 5, 2012, 10 am–2 pm, Bronfman Hall, Hilary and Galen Weston Wing, Level 2
Was *T. rex* the fiercest carnivore? Find out at the next Explorers' Club event, a day of dino-mite crafts, activities, exciting hunts, and more! Free and exclusive to Explorers' Club Members. A parent must accompany the Explorer. All children must be registered. Go to **rom.on.ca/explorers** or call 416.586.5700.

ROM Explorers' Club—A Really Cool Club Just for Kids!
Explorers' Club offers events, newsletters, a personal passport, and more. Available for children of ROM Members only. $15 per child per year. For details, visit **rom.on.ca/explorers** or call 416.586.5700.

Special Offers for Members

Gardiner Museum
2-for-1 Admission for ROM Members
Present your valid ROM membership card at the Gardiner's admission desk to receive 2-for-1 admission plus a 10% discount at the Gardiner Shop.

Free General Admission to 6 Canadian Museums and Art Galleries
ROM Members can enjoy free general admission to the Art Gallery of Nova Scotia, the Glenbow Museum, the Kamloops Art Gallery, the McCord Museum of Canadian History, the Montreal Museum of Fine Arts, and the Vancouver Art Gallery.

Valid ROM membership card(s) and ID must be presented upon arrival. Admission may not include guests, entrance to blockbuster exhibitions, or ticketed programs and events.

Attention Members

The Royal Ontario Museum Act provides for the election of three Members of the ROM to the Board of Trustees to hold office for a term of three years each. One of these positions will become vacant June 30, 2012.

The incumbent, Danuta Buczynski, has served one three-year term as a membership-elected trustee and is eligible to stand for a second three-year term. The vacant term of office would be July 1, 2012, to June 30, 2015. Nominations for this position supported by the signatures of 25 active ROM Members (please include membership numbers) should be forwarded to reach the Office of the Board Secretary by the close of nominations at noon on Thursday, April 5, 2012. If you are interested in pursuing a membership-elected trustee position on the ROM Board of Trustees, please call the ROM Board Office at 416.586.5886 for further details.

ROMTRAVEL

Amazing Argentina

FIRE, ICE, WATER, AND WINE

The most European of South American countries, Argentina is romantic, vibrant, and steeped in history. But because of a chaotic economic past, it comes without the hefty European price tag. Its vast landscape runs 3,650 km from the snow-covered Andes to subtropical jungle.

Fire
With a bustling café society, a wealth of artisans, and glorious architecture, Buenos Aires is one of today's hot travel destinations. The Teatro Colón ranks among the world's great opera houses. The Plaza de Mayo has been the scene of historic events from the country's first steps toward independence in 1810 to the mass rallies of Peronism in the 1940s. And colonial treasures, such as the Basilica Nuestra Señora del Pilar, abound. Heating up the city's night life, the tango originated in brothels and ports as 19th-century immigrants streamed in seeking fortune and instead found solace in dance halls.

Ice
El Calafate is the gateway to one of the world's few glaciers that still advances from time to time, despite global warming. The Southern Patagonian Ice Field contains 47 major glaciers, including on-the-move Perito Moreno Glacier in Parque Nacional Los Glaciares, a UNESCO World Heritage Site.

Water
Iguazú Falls, newly voted as one of the New Seven Wonders of the Natural World, consists of more than 270 separate waterfalls ranging from 60 to 82 metres in height. Set in a lush forest of ferns, begonias, and orchids, the falls are another UNESCO World Heritage Site.

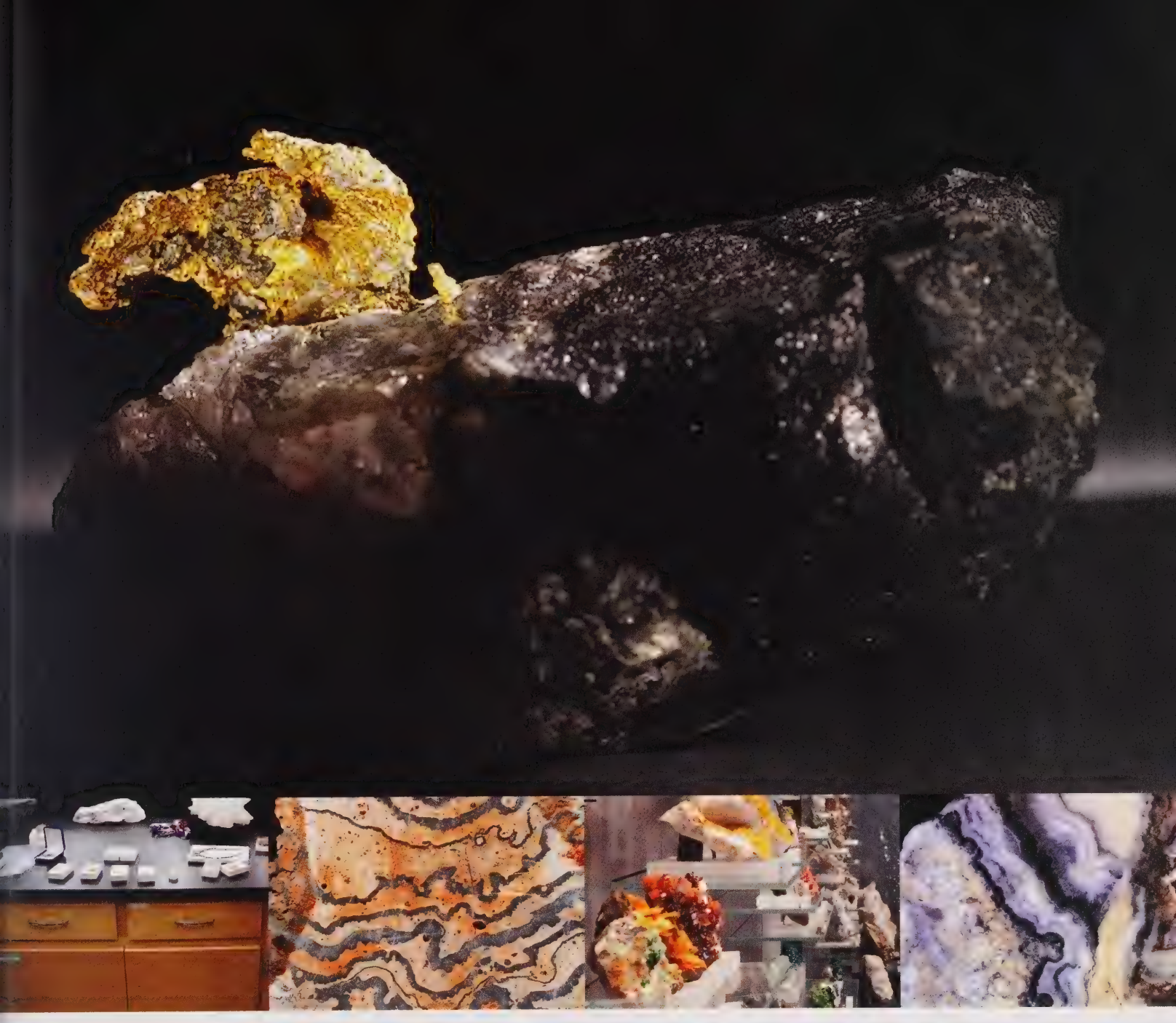
Wine
Famous for its Malbec variety, Mendoza is renowned as the heart of South American winemaking. Founded in 1561, the city is an oasis of boulevards, fountains, plazas, and restaurants, and affords spectacular views of the Andes.

Join ROMtravel for an outstanding journey to Argentina. Dr. Peter Blanchard, professor of Latin American History at the University of Toronto, will be with us to provide expert insights.

> **April 7–23, 2013**
Cost: $11,900 (includes international airfare)
For further information, contact ROMtravel at 416.586.8034, e-mail travel@rom.on.ca, or visit the website rom.on.ca/programs/rom_travel.

Dancing the tango, Jacom Stephens, Getty Images

Upcoming trips
Turkey September 30–October 15, 2012
Santa Fe September 28–October 4, 2012
South Africa March 2013
Bhutan, Nepal, & Lhasa March 2013
Tuscany and Umbria April 7–21, 2013
Arctic Passage August 2013
Chicago September 23–27, 2013



A Golden Opportunity

HELP THE ROM UNEARTH A DAZZLING COLLECTION OF ORES AND MINERALS

The ROM Governors are currently raising $4 million to acquire the Kirwin Collection—an important international collection of 22,000 ores and minerals, many from mines no longer accessible. Supporting this initiative will enable the ROM to continue its world-class research in mineralogy and geology, enhance its collections storage and classroom facilities, and provide generations of future industry leaders with an appreciation of the world's natural resources.

ROM Royal Ontario Museum Governors

FOR MORE INFORMATION ON HOW YOU CAN SUPPORT EARTH SCIENCES AT THE ROM AND THE ACQUISITION OF THE REMARKABLE KIRWIN COLLECTION, PLEASE CONTACT SCOTT FORFAR AT 416.586.8012 OR SCOTTF@ROM.ON.CA.

EVENTS

RPC and YPC Patrons enjoyed a first look at the ROM's blockbuster exhibition *Maya: Secrets of their Ancient World* in November 2011.

Patrons to Enjoy a Sneak Preview of New Exhibition

Royal Patrons' Circle (RPC) and Young Patrons' Circle (YPC) Members will be among the first to view the ROM's thrilling new exhibition *Ultimate Dinosaurs: Giants from Gondwana* before it opens to the public. The exclusive preview of this must-see exhibition will be held Tuesday, June 19, 2012.

Early access to exhibitions is just one of the many benefits ROM Patrons receive. To learn more about the Royal Patrons' Circle or to join RPC, call 416.586.5556. For more information about the Young Patrons' Circle or to join YPC, call 416.586.8003 or visit **rom.on.ca/ypc**. Join now to receive your special invitation!

Run Away with PROM: Circus

Come one, come all! Experience the greatest party on Earth at the seventh annual PROM on Saturday, March 31, 2012. Join hundreds of Young Patrons' Circle (YPC) Members and guests to celebrate the wondrous evolution of the ROM's world cultures and natural history collections.

Fancy a round of ring toss? Craving cotton candy and popcorn? Want to be a ringmaster on the dance floor? Join PROM: Circus for a fresh take on the old-fashioned big top, complete with live entertainment and dancing, strolling circus performers, fun-fair activities, and gourmet carnival fare.

Proceeds from PROM: Circus will support the YPC Research Fund and other ROM priorities that bring exhibitions, galleries, and programs to life at the Museum.

Tickets are on sale now at **rom.on.ca/prom**.

Ryan Walker Photography

FROM THE

rom governors

FOR THE LOVE OF DINOSAURS

Supporting the ROM in a *giant* way

Since I joined the ROM Governors nearly a year ago, I have discovered that everyone—from wide-eyed three-year-olds to paleontology PhD students—loves dinosaurs. What is it about these beautiful beasts that captures our imagination so powerfully? Perhaps it's simply their sheer size—mighty fossil structures that make you look way, way up and picture what the world might have been like millions of years ago.

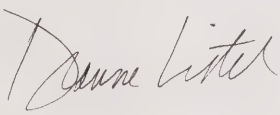
The ROM's upcoming exhibition in the Garfield Weston Exhibition Hall, *Ultimate Dinosaurs: Giants from Gondwana*, is sure to delight visitors of all ages. Presented by investment dealer Raymond James Ltd., this cutting-edge exhibition is based on ground-breaking research that takes visitors on an interactive journey through the ancient land of Gondwana to meet the world's largest and strangest dinosaurs.

The long and rich history of world-class paleontology at the ROM (did you know the Royal Ontario Museum of Paleontology was one of five museums that made up the ROM when it first opened in 1914?) is mirrored by the remarkable record of philanthropic support for paleontological projects, galleries, and educational initiatives.

The James and Louise Temerty Galleries of the Age of Dinosaurs at the ROM is home to 350 fossils, dinosaur specimens, and fully mounted skeletons, including Canada's largest dinosaur on display—the only *Barosaurus* skeleton with real fossils displayed anywhere in the world. Visitors can also view a 6-metre-long ichthyosaur, *Eurhinosaurus longirostris*, from the early Jurassic period, a specimen the Museum acquired through the generous support of the Louise Hawley Stone Charitable Trust. Other areas of the gallery include the TD Bank Financial Group Exhibit of Continents Adrift, the Evolution of Birds, and K-T Extinction, which explore the events that may have led to the extinction of the dinosaurs at the end of the Cretaceous period.

An intimate group of donors and sponsors of *Ultimate Dinosaurs: Giants from Gondwana* recently enjoyed an exclusive media trip to Research Casting International (RCI) in Trenton, Ontario, for a behind-the-scenes look at how these enormous models are constructed. Dr. David Evans, ROM associate curator of Vertebrate Paleontology, accompanied the group to the 45,000-square-foot, state-of-the-art facility to offer his expertise on dinosaur restoration, casting, and mounting for the exhibition.

As excitement continues to build for the opening of *Ultimate Dinosaurs* on June 23, the trip to RCI is a perfect example of how we strive to connect our supporters more deeply with the Museum and to create truly memorable donor experiences around the ROM's exhibitions, events, and programs.



DIANNE LISTER
PRESIDENT AND
EXECUTIVE DIRECTOR,
ROM GOVERNORS

Visitors enjoying the sights in the James and Louise Temerty Galleries of the Age of Dinosaurs.

Dianne Lister: George Whiteside. Dinosaurs: dattuphoto – 1328020 Ontario Inc.

ROM BOARDS

PATRONS His Excellency the Right Honourable David Johnston, C.C, C.M., C.D., Governor General of Canada, The Hon. David C. Onley, O.Ont, Lieutenant Governor of Ontario
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SUPPORT

Left: A warm hello at the Patrons' Preview of *Maya: Secrets of their Ancient World.*

Upgrade Your Membership

There's never been a better time to join the Royal Patrons' Circle (RPC) or Young Patrons' Circle (YPC) at the Museum. Upgrade your ROM membership to take advantage of these benefits:

Get one free month of RPC or YPC benefits

Whether you are paying monthly or have paid in full for your current ROM membership, upgrade at any time to receive a full free month of membership at the RPC or YPC level.

Give your current membership as a gift

If you have paid for your ROM membership and there is time remaining on it, you can still upgrade your membership to the RPC or YPC level at any time. You'll either receive a free month of Patron benefits or you can choose to gift the remainder of your current ROM membership for someone else to enjoy.

Join us for our most engaging season of events yet! Upgrade to RPC or YPC membership today to attend these highly-anticipated events:

March 6, 2012
YPC Cabinet of Curiosities
Curator-led tours of select ROM vaults, followed by a wine-and-cheese reception.

March 31, 2012
PROM: CIRCUS
YPC Members receive a discount on tickets to this YPC-hosted annual fundraising bash. PROM: Circus is open to the public. Visit **rom.on.ca/prom** for tickets and additional information.

April 10, 2012
RPC Behind-the-Scenes Tours
Curator-led tours of select ROM vaults, followed by a wine-and-cheese reception.

May 9, 2012
RPC In From the Field celebrates the ROM's world-renowned curatorial research. Hear from three Museum experts on their latest work in Natural History and World Cultures, followed by a wine-and-cheese reception. RPC Members may bring a guest to this special annual event.

May 17, 2012
YPC Discovery Night is one of the biggest events on the YPC calendar. Patrons and guests enjoy cocktails in the striking James and Louise Temerty Galleries of the Age of Dinosaurs after being the first to hear which fascinating ROM curatorial project YPC will support this year.

June 19, 2012
Patrons' Preview of *Ultimate Dinosaurs: Giants from Gondwana*
Both RPC and YPC Members will be invited to preview the ROM's blockbuster exhibition *Ultimate Dinosaurs: Giants from Gondwana* before it opens to the public. This highly anticipated preview and cocktail reception will be the highlight of the season!

CONTACT INFO:
RPC office, 416.586.5556 / rpc@rom.on.ca.
YPC office, 416.586.8003 / ypc@rom.on.ca.

Left: ROM technician Robert Mason showcasing a mace in the Museum's collection during an RPC Behind-the-Scenes tour.

Left: YPC Patrons holding a piece of Mars during a YPC Cabinets of Curiosities tour of the ROM's Mineralogy section.

Maya preview, Ryan Walker Photography. RPC weaponry tour, Jessica Hall-Cummings. YPC behind-the-scenes tour, Jaclyn Klein

SUPPORT

The Future Gallery of Early Life

REIMAGINING THE FOSSIL RECORD FOR A 21ST-CENTURY MUSEUM

The ROM Governors are in the process of raising $4 million for the Peter F. Bronfman Gallery of Early Life, which is slated to open in 2014—the Museum's centenary year. For additional information on investment opportunities, please call Dianne Lister at 416.586.5660.

Far left: Cast taken from an ancient deep sea bed surface in the future Peter F. Bronfman Gallery of Early Life.

Left: *Pleurocystites squamosus*—an extinct cystoid echinoderm, Lake Simcoe, Ontario.

Left: Fossil assemblage—impressions of large multi-celled organisms of unknown biology—from Mistaken Point, Newfoundland and Labrador.

The story of life on Earth is a vast, sweeping tale, full of dramatic natural events, mass extinctions, global ice ages, and the astonishing, inspiring ability of life to persevere. And yet we have relatively little knowledge or understanding of the first 85 percent of the saga.

Our planet is 4.5 billion years old, and for 4 billion of those years some sort of life has been present. Unravelling the pieces of the evolutionary puzzle is an ongoing exercise, with new discoveries happening on an almost daily basis. The ROM is at the forefront of research from around the globe to further our understanding of early life.

On page 22, you'll read about the ground-breaking research led by Dr. Jean-Bernard Caron, ROM curator of Invertebrate Paleontology and a foremost expert on the Burgess Shale, a fossil locality in Yoho National Park that is often referred to as one of the world's most significant fossil discoveries. The ROM's collection of Burgess Shale fossils is the largest and most comprehensive in the world, with more than 150,000 individual specimens representing 200 species from a dozen localities in southeastern British Columbia.

From coast to coast in Canada, key sites have contributed spectacular fossil specimens to the ROM's Early Life collection. Three have been deemed UNESCO World Heritage Sites for their outstanding value to our natural heritage and the understanding of the evolution of life on Earth. All of these sites are also active research sites today, where researchers from around the world delve further into the rock and add to our understanding of our common history.

The ROM's future Peter F. Bronfman Gallery of Early Life will be a model for galleries and museums worldwide, the kind of innovative and participatory space that invites visitor input and offers new and exciting experiences with each and every return visit. ROM researchers and educators will assist in the interpretation and animation of early life fossils. With the addition of the Gallery of Early Life to its many natural history galleries on the second floor, the ROM is uniquely positioned to tell the complete story of the evolution of life on Earth—in a wonderfully immersive and fascinating way—from the earliest beginnings of a seemingly uninhabitable planet to the 21st century.

Shelter from the Sea

Wedgwood's art and the science of the paper nautilus

BY PETER KAELLGREN AND JANET WADDINGTON

Celebrated potter Josiah Wedgwood I (1730–1795) took great interest in the latest science and technology. His enthusiasm for conchology, the study of shells, inspired designs for a dessert service introduced by Wedgwood around 1790, including the bowl on which this one is based. Periodically, the Wedgwood Factory has revived models from the original service. This version of the "Nautilus Footed Bowl," with its coral stem and shell foot, was redesigned for Wedgwood in the 1930s by architect Keith Murray.

But its name has always been deceiving. The 21.5-cm-tall bowl does not actually represent the shell of a chambered nautilus, but that of the so-called paper nautilus. Neither true nautilus, nor paper, and not even technically a shell, the paper nautilus shell is actually the egg case of a tropical-to-subtropical octopus called *Argonauta*. The female *Argonauta* uses specially adapted tentacles to secrete a paper-thin case or brood pouch of calcite to hold and protect her eggs. She also lives inside the case for her own protection and buoyancy control. *Argonauta* is the only genus of octopus known to produce such an egg case. While other octopi live on the seafloor near shore, *Argonauta* lives in the open ocean.

Unlike its namesake the chambered nautilus, which is permanently attached within its shell, the paper nautilus uses its specialized tentacles to hold onto its "shell" and keep it from washing away. Wedgwood's bowl appears most closely to resemble the egg case of *Argonauta hians*, which averages just 8 to 12 cm long, although a fair amount of artistic license is evident, including a considerable increase in size. Combining inspiration from natural history with design and ceramic technology, this bowl is a perfect embodiment of Wedgwood's fascinations—and a worthy representative of the varied collections of the Royal Ontario Museum. o

JANET WADDINGTON is an assistant curator in the Paleontology section of the ROM's Department of Natural History. **PETER KAELLGREN** is a retired curator from the European section of the ROM's Department of World Cultures. He is the author of *Wedgwood: Artistry and Innovation*, published by the Royal Ontario Museum Press.

ROM 2008.2.15, Gift of Conrad Biernacki and Brian Musselwhite

DMV ENDOWMENT FUND

$100,000 for 100 Years

100 YEARS. THAT'S A LONG TIME. AND FOR MORE THAN 50 OF THOSE YEARS, THE DEPARTMENT OF MUSEUM VOLUNTEERS (DMV) HAS BEEN AT THE HEART OF THE ROM. HELP US CONTINUE OUR TRADITION OF SERVICE AND SUPPORT. MAKE A CONTRIBUTION TO THE DMV ENDOWMENT FUND TO HELP SUSTAIN THE MUSEUM FOR THE NEXT 100 YEARS.

To make a gift, please contact Nita Reed by email dmvendowment@rom.on.ca or donate on line at www.rom.on.ca/donate and select DMV in the drop-down menu.

ROM Royal Ontario Museum Governors

HENRI BEAU R.C.A., *Woman Reading*, oil on panel, 10" x 13.25"

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